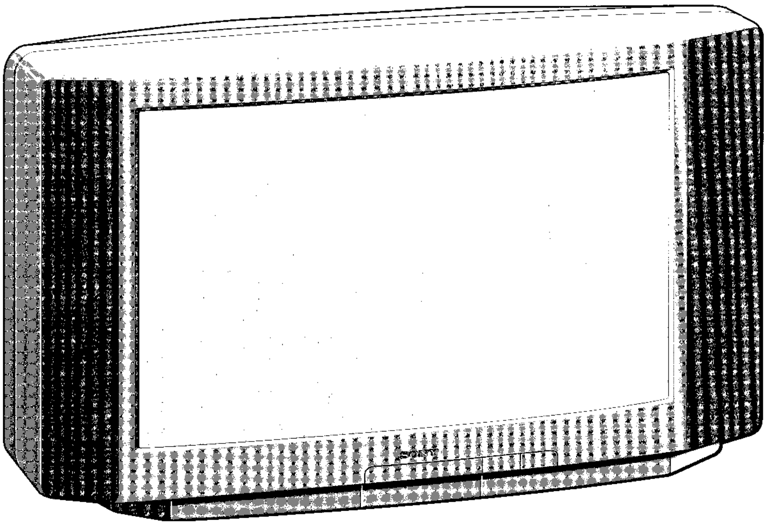
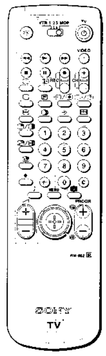
SERVICE MANUAL

AE-4 CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.	MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-28WS4A	RM-862	Italian	SCC-K43C-A	KV-28WS4E	RM-862	Spanish	SCC-K42C-A
KV-28WS4B	RM-862	French	SCC-K45C-A	KV-28WS4K	RM-862	OIRT	SCC-K44E-A
KV-28WS4D	RM-862	AEP	SCC-K41C-A	KV-28WS4R	RM-862	OIRT	SCC-K44F-A





SuperTrinitron

WIDE

MICROFILM

TRINITRON® COLOR TV

SONY®

ITEM MODEL	Television System	Channel Coverage	Colour System
Italian	B/G/H, D/K	B/G/H VHF: E2-E12 UHF: S1-S20 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, PAL+, SECAM NTSC3.58/4.43 (video input only)
French	B/G/H, D/K, L, I	L SECAM VHF: F2-F10 UHF: F21-F69 TV CABLE TV (1) VHF: B-Q UHF: S21-S44 PAL B/G/H VHF: E2-E12 UHF: E21-E69 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 PAL I UHF: B21-B69 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, SECAM NTSC3.58/4.43 (video input only)
AEP	B/G/H, D/K	B/G/H VHF: E2-E12 UHF: S1-S20 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, PAL+, SECAM NTSC3.58/4.43 (video input only)
Spanish	B/G/H, D/K	PAL B/G/H VHF: E2-E12 UHF: E21-E69 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, PAL+, SECAM NTSC3.58/4.43 (video input only)
OIRT	B/G/H, D/K	B/G/H VHF: E2-E12 UHF: E21-E69 CABLE TV (1) : S1-S41 CABLE TV (2) : S01-S05, M1-M10, U1-U10 ITALIA VHF: A-H, H1, H2 D/K VHF: R01-R12 UHF: R21-R69 CABLE TV VHF: S1-S41, UHF: S01-S05	PAL, PAL+, SECAM NTSC3.58/4.43 (video input only)

MODEL	28WS4A	28WS4B	28WS4D	28WS4E	28WS4K	28WS4R
Power Consumption	122W	131W	135W	135W	135W	135W

SPECIFICATIONS

Picture Tube	Super Trinitron WIDE Approx. 71 cm (28 inches) (Approx. 66 cm picture measured diagonally) 110° deflection

Rear/Front Terminals

[REAR]

21-pin Euro connector (CENELEC standard)
- Inputs for audio and video signals
- Inputs for RGB
- Outputs of TV video and audio signals

2/ 2 21-pin Euro connector
- Inputs for audio and video signals
- Inputs for S video
- Outputs for audio and video signals (selectable)

Audio outputs (variable) - phono jacks

External speaker terminals : 2-pin DIN (5)

[FRONT]

3 Video input - phono jack

3 Audio inputs - phono jacks

3 S video input - 4 pin DIN

Headphones jack: stereo minijack

Sound output	2x30W (music power), 2x15W (RMS) Centre 1x30W (Music), 1x15W (RMS) Surround 2x15W(Music), 2x7.5W (RMS)
Dimensions	798x491x531 mm approx.
Weight	Approx. 47.0 kg
Supplied accessories	Remote Commander RM-862 (1) Batteries R6 (2) Surround speaker (2) Surround Loudspeaker lead (2) Centre speaker lead (1) Aerial cable (1)

Other features

Digital comb filter (High resolution)
FASTEXT, DNR (Digital Noise Reduction)
Dolby Digital Surround System, 100Hz Digital Plus
Graphic Equalizer, PAP (Picture and Picture)
PAL plus, Multi PIP
NICAM stereo (KV-28WS4B and 28WS4U only)

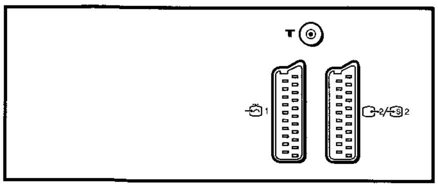
[RM-862]

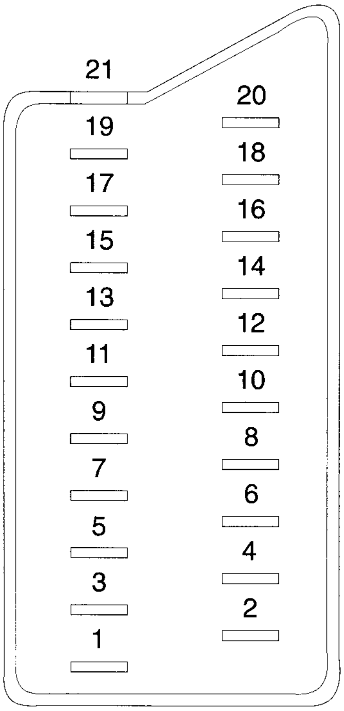
Remote control system	Infrared control
Power requirements	3V dc (2 batteries) R6 (size AA)
Dimensions	Approx. 210x56x24 mm (w/h/d)
Weight	Approx. 110g (Not including battery)

Design and specifications are subject to change without notice.

Model name / Item	KV-28WS4A	KV-28WS4B	KV-28WS4D	KV-28WS4E	KV-28WS4K	KV-28WS4R
PIP	OFF	OFF	OFF	OFF	OFF	OFF
MPIP	ON	ON	ON	ON	ON	ON
Rotation Coil	ON	ON	ON	ON	ON	ON
VM Set (Velocity Modulation)	ON	ON	ON	ON	ON	ON
PAL +	ON	ON	ON	ON	ON	ON
Scart 1	ON	ON	ON	ON	ON	ON
Scart 2	ON	ON	ON	ON	ON	ON
Front in (3)	ON	ON	ON	ON	ON	ON
AKB in 16:9 mode	ON	ON	ON	ON	ON	ON
TXT	ON	ON	ON	ON	ON	ON
FLOF	ON	ON	ON	ON	ON	ON
TOP	ON	ON	ON	ON	ON	ON
Norm B/G/H	ON	ON	ON	ON	ON	ON
Norm I	OFF	ON	OFF	OFF	OFF	OFF
Norm D/K	ON	ON	ON	ON	ON	ON
Norm L	OFF	ON	OFF	OFF	OFF	OFF
Language Preset	Italian	French	German	Spanish	OIRT	OIRT

21 pin connector (⊖1, ⊖2/⊖S2)





Pin No.	1	2	4	Signal	Signal Level
1	○	○	○	Audio output B (Right)	Standard level : 0.5V rms Output impedance : Less than 1k ohms*
2	○	○	○	Audio input B (Right)	Standard level : 0.5V rms Output impedance : More than 10k ohms*
3	○	○	○	Audio output A (Left)	Standard level : 0.5V rms Output impedance : Less than 1k ohm*
4	○	○	○	Ground (Audio)	
5	○	○	○	Ground (Blue)	
6	○	○	○	Audio input A (Left)	Standard level : 0.5V rms Output impedance : Less than 10k ohm*
7	○	●	●	Blue input	0.7 ± 3dB, 75 ohms, positive
8	○	○	○	Function select (AV control)	High state (9.5 - 12V) : Part mode Low state (0 - 2V) : TV mode Input impedance : More10k ohms Input capacitance : Less than 2nF
9	○	○	○	Ground (Green)	
10	○	○	○	Open	
11	○	●	●	Green	
12	○	○	○	Open	
13	○	○	○	Ground (Red)	
14	○	○	○	Ground (Blanking)	
15	○	—	—	Red input	0.7 ± 3dB, 75 ohms, positive
	—	○	○	(S signal) croma input	0.7 ± 3dB, 75 ohms, positive
16	○	●	●	Blanking input (Ys signal)	High state (1 - 3V) Low state (0 - 0.4V) Input impedance : 75 ohms
17	○	○	○	Ground (Video output)	
18	○	○	○	Ground (Video input)	
19	○	○	○	Video output	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)
20	○	—	—	Video input	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)
	—	○	○	Video input Y (S signal)	1V ± 3dB, 75ohms, positive sync : 0.3V (-3 + 10dB)
21	○	○	○	Common ground (plug, sheild)	

○ Connected ● Not Connected (Open) * at 20Hz - 20kHz

Pin No.	Signal	Signal Level
1	Ground	
2	Ground	
3	Y (S signal) input	1V ± 3dB 75 ohm, positive Sync. 0.3V -3 + 10dB
4	C (S signal) input	0.3V ± 3dB 75ohm, positive Sync.

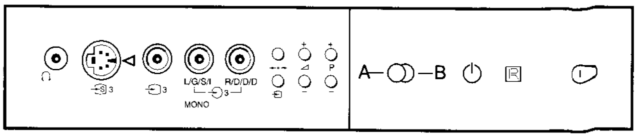


TABLE OF CONTENTS

Section *Title* *Page*

1. GENERAL

Overview 7
Basic Operation 8
Advanced Operation 10
Teletext 14
Optional Equipment 16
Additional Information 16

2. DISASSEMBLY

2-1. Rear Cover Removal 17
2-2. Speaker Removal 17
2-3. Chassis Assy Removal 17
2-4. Service Position 17
2-5. G Board Removal 17
2-6. A Board Removal 18
2-7. Picture Tube Removal 18
Removal and Replacement of the Main-Bracket Bottom Plates 19

3. SET-UP ADJUSTMENTS

3-1. Beam Landing 20
3-2. Convergence 21
3-3. Focus 23
3-4. Screen (G2), White Balance (Adjustment in the service mode with remote commaner) 23

4. CIRCUIT ADJUSTMENTS

4-1. Electrical Adjustments 24
4-2. Volume Electrical Adjustments 28
4-3. Test Mode 2: 29

Section *Title* *Page*

5. DIAGRAMS

5-1. Block Diagram (1) 31
Block Diagram (2) 34
Block Diagram (3) 37
Block Diagram (4) 41
Block Diagram (5) 43
Block Diagram (6) 45
Block Diagram (7) 48
5-2. Circuit Boards Location 50
5-3. Schematic Diagrams and Printed Wiring Boards 50
*T Board 53
*A Board 59
*Q Board 69
*B Board 77
*C Board 85
*J1 and K Board 88
*VM Board 91
*D Board 97
*G Board 101
5-4. Semiconductors 105
5-5. IC Block Diagrams 108

6. EXPLODED VIEWS

6-1. Chassis 109
6-2. Picture Tube 110

7. ELECTRICAL PARTS LIST 111

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND, IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION

APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION !!

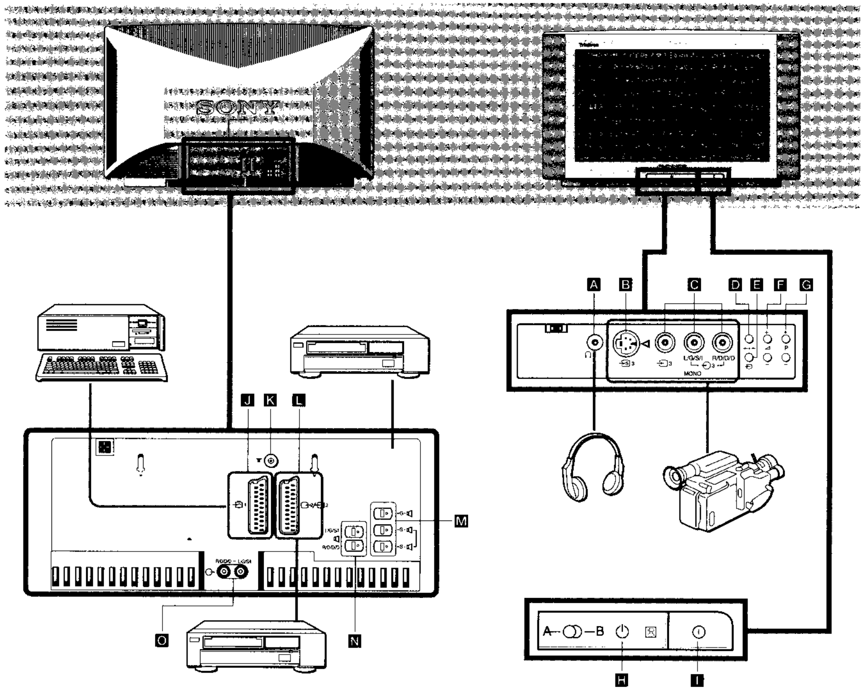
AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE PUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1 GENERAL

The operating instructions mentioned here are partial abstracts from the Operating Instructions Manual. The page numbers of the Operating Instruction Manual remain as in the manual.



SONY
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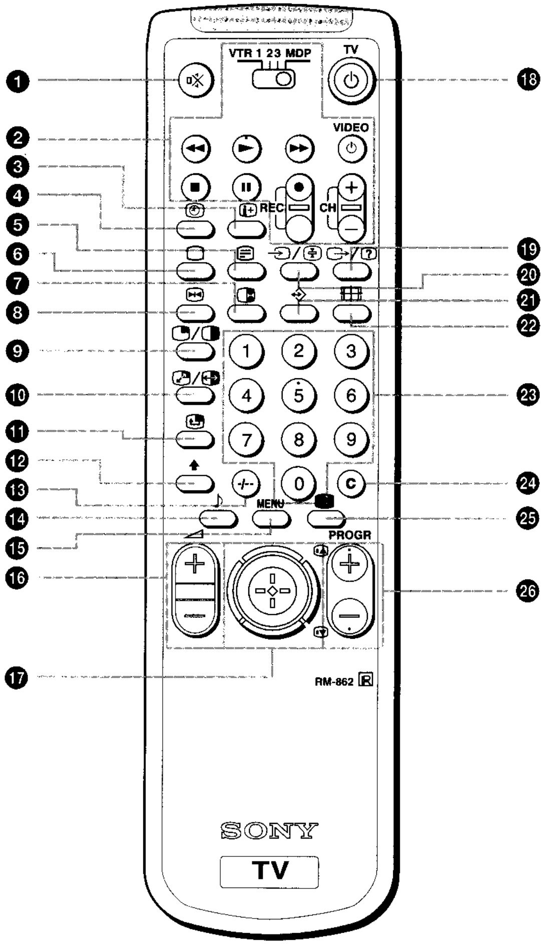
A—B



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26
VTR 1 2 3 MDP
TV
VIDEO
REC
CH
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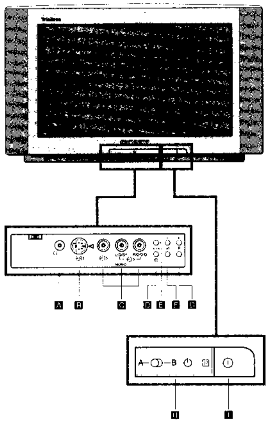
7
8
9
-/--
0
C
MENU
PROGR
RM-862
SONY
TV

Overview

This section briefly describes the buttons and controls on the TV set and on the Remote Commander. Please open the flaps at the front and at the back of the Instruction Manual for detailed illustrations of the Remote Commander and the TV set. Letters in boxes refer to the buttons and connectors on the TV set, numbers in circles to the buttons on the Remote Commander. For more information, refer to the pages given next to each description.

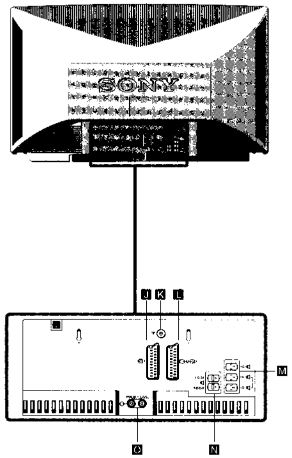
TV set – front

Reference and Symbol	Name	Refer to page
A ∩	Headphones jack	13
B ⊸3	S video input jack	20
C ⊸3, ⊸3	Input jacks (video, audio)	20
D →•←	Reset button	7
E ⊸	Input mode button	7
F ⊿ +/-	Volume control	7
G P +/-	Programme buttons	7
H ⏻	Standby mode indicator	7
I ⏼	Main power switch	7



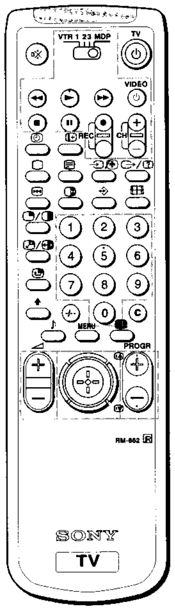
TV set – rear

Reference and Symbol	Name	Refer to page
J ⊖1	21-pin Euro connector	20
K ㅠ	Aerial socket	5
L ⊖2/⊖2	21-pin Euro connector	20
M C ◁, S ◁, S ◁,	External speaker terminals (Centre, Surround)	4
N L/G/S/I R/D/D/D ◁	Left and right speaker terminals	4
O ⊖ R/D/D/D L/G/S/F	Audio phono jacks	20



Remote Commander

Reference and Symbol	Name	Refer to page
❶ ◁✕	Muting on/off button	7
❷	**VCR operation**	21
VTR 123 MDP	Video equipment selector	21
◀◀ ▶ ▶▶ ■ ❚❚ ●	Video equipment operation buttons	21
VIDEO ⏻, CH +/–		
❸ ⊞	On-screen display button	7
❹ ⊙	Time display button	7
❺ ⊜	Teletext button	7, 17
❻ ▢	TV power on/TV mode button	7
❼ ◨	PAP freeze button	16
❽ ⊟	Freeze button	7
❾ ◔/◨	PAP on/off button	16
❿ ⊘/⊕	PAP Swap button	16
⓫ ⊕	No function on this set	
⓬ 🠉	PAP source selector	16
⓭ - / - -	Double digit entering button	7
⓮ ♪	Sound mode button	13
⓯ MENU	Menu on/off button	8
⓰ ⊿ +/-	Volume control button	7
⓱ ◎	Joystick for Menu selection Press to confirm selection (OK function)	8
⓲ TV ⏻	TV standby button	7
⓳ ⊖	Output mode selector	20
⊘	Teletext: Reveal button	17
⓴ ⊸	Input mode selector	7
⊕	Teletext: Freezing the subpage	17
㉑ ⟐	Teletext: Favourite pages button	19
㉒ ⊞	Screen format button	7
㉓ 1, 2, ... 9, 0	Number buttons	7
㉔ C	Direct channel entering button	7
㉕ ●	Picture mode button	13
㉖ PROGR +/-	Programme buttons	7
⊕⊖	Teletext: Page up/page down buttons	17



Basic Operation

Step 1 Installation

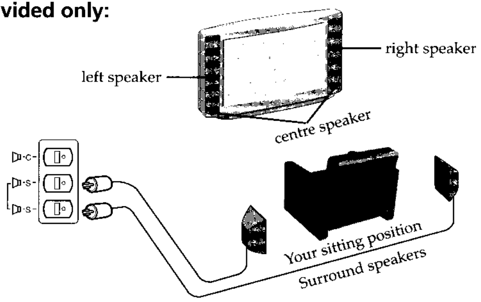
A Connecting the Speakers

! Before first switching the TV on, make sure to connect the speakers to the TV.

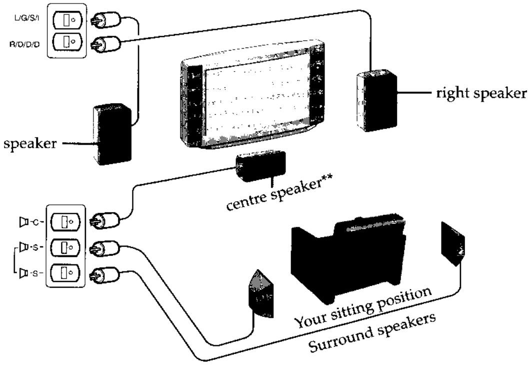
Connect the speakers using the leads provided. The striped lead (+) is for the red terminal of the speaker. The black lead (–) is for the black terminal.
When using your own speakers, make sure they are at least 8 ohms impedance and magnetically shielded.

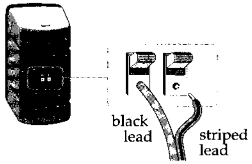
Dolby* Pro Logic Surround normally requires 5 speakers:
Centre speaker (incorporated in the TV) – for anchoring the stable sound image, like dialogues, to the TV screen.
Left and right front speakers (incorporated in the TV) – for the normal two channel stereo or bilingual broadcasts.
Surround speakers – for the special effects created by the surround channel.

Connect the speakers provided only:


right speaker
left speaker
centre speaker
C
S
S
Your sitting position
Surround speakers

Connect your own speakers:


L/G/S/I
R/D/D/D
right speaker
left speaker
centre speaker**
C
S
S
Your sitting position
Surround speakers


black lead
striped lead

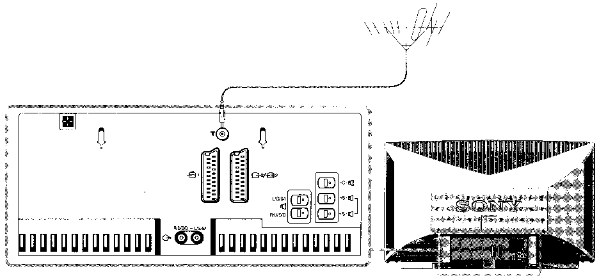
---

*Manufactured under license from Dolby Laboratories Licensing Corporation. »Dolby«, the double-D symbol and »Pro Logic« are trademarks of Dolby Laboratories Licensing Corporation.

** Use the supplied speaker cable to connect the centre speaker.

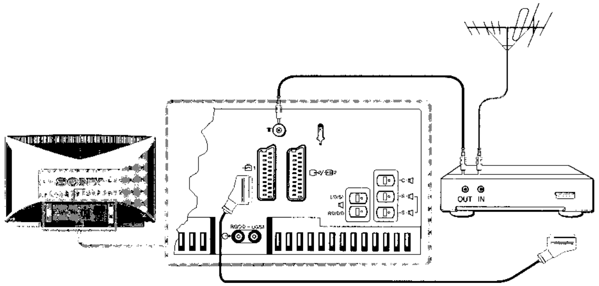
B Connecting the Aerial

(If you connect a VCR, skip to step C)
Insert the aerial plug of the supplied aerial cable tightly into the aerial socket ⊤ K.



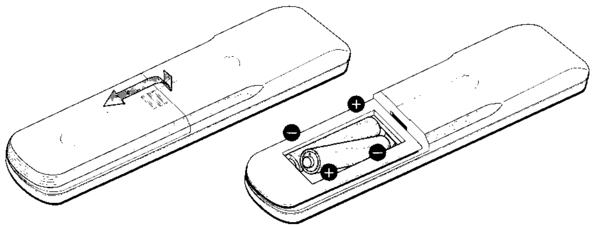
C Connecting a VCR

We recommend that you tune in the VCR signal to the programme position »0«.
Use the preset function »Manual Programme Preset« (page 8) to do this.



D Inserting the batteries into the Remote Commander

Insert the batteries checking the correct polarities.



! Respect your environment! Dispose of used batteries in an evironmental friendly way.

Step 2 Basic Presetting

A Choosing the Menu Language and the Country

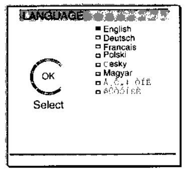
Using this function you select the language of the menu screens. Also you select the country in which you will use the TV. In this way the channels of the selected country will automatically get the top positions during automatic presetting.

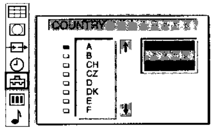
1 Press the power switch ① 🅸 on the TV. If the standby indicator ⏻ 🅷 on the TV is lit, press ▢ ❻ or a number button ㉓ on the Remote Commander. Press the MENU button ⓯ on the Remote Commander. The menu LANGUAGE appears.

2 Push the joystick ⓱ to blue or green to select the language. Press the joystick ⓱ to confirm your selection. The menu COUNTRY appears.

3 Push the joystick ⓱ to blue or green to select the country in which you wish to operate the TV. Press the joystick ⓱ to confirm the selection.

4 Press MENU ⓯ to restore the normal TV picture.





B Presetting Channels Automatically

With this function the TV automatically searches and stores up to 100 channels onto programme positions. If you prefer »Manual Presetting of channels« please refer to page 8 in Advanced Operation.

1 Press MENU ⓯.

2 Push the joystick ⓱ to blue or green to select the symbol 🧰 on the menu screen, then push to yellow.

3 Push the joystick ⓱ to blue or green to select »Auto Programme«, then push to yellow. The menu AUTO PROGRAMME appears.

4 **a)** All items shown on the menu screen are as wanted: Press joystick ⓱ to select START. Now the automatic channel presetting starts from programme position 1.

or

4 **b)** You wish to change items as shown on the menu screen: Push the joystick ⓱ to blue or green. Push to yellow repeatedly until the desired item is highlighted.

Push the joystick ⓱ to blue or green to select the following possibilities:

ACI
(Automatic Channel Installation, depending on availability of service in your country)
on: fast channel presetting by special networks using the channel frequency (e.g. F055) TV-system and station label
off: ACI is not active, only ITP (Intelligent Tuner Preset)

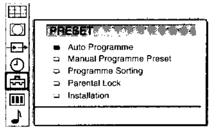
SYS (TV Broadcast System)
B/G for Western European Countries
D/K for Eastern European Countries

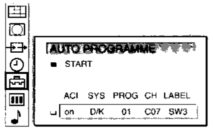
PROG (Programme Position)
Presetting automatically starts from position 1.

CH (channel)
C to start presetting with terrestrial channels
S to start presetting with cable channels

Press the joystick ⓱ as soon as the automatic presetting should start.

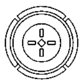
5 When presetting is finished the normal TV picture appears.





ACI	SYS	PROG	CH	LABEL
on	D/K	01	C07	SW3

Joystick

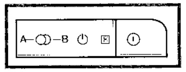


Step 3 TV operation

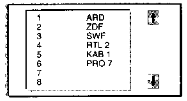
Using Direct Access Buttons

This section explains functions used while watching TV. Most operations are carried out using the Remote Commander (numbers in circles). All basic functions are also available on the TV set itself (letters in boxes).

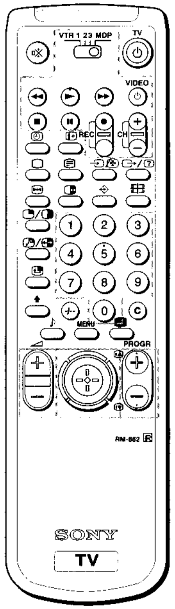
To	Press
Switch on	• ① 🅸 on TV.
Switch off temporarily (Standby mode)	• ⏻ ⓲. TV is now in standby mode and indicator ⏻ 🅷 lights up.
Switch on from standby mode	• ▢ ❻, PROGR +/- ㉖ 🅶 or any number button ㉓.
Switch off completely	• ① 🅸 on TV. ! To save energy, we recommend to switch off your TV completely when TV is not in use.
Select programmes	• PROGR +/- ㉖ 🅶 or number buttons ㉓. For double digit number, press -/-- ⓭, then the two number buttons ㉓. E.g. for 24, press ⓭, then 2 and 4.
Display a programme table	• The joystick ⓱. Push the joystick ⓱ to blue or green to select a programme, then press the joystick ⓱ to confirm.
Display on screen indications	• 🛈 ❸. Press again to make the indications disappear.
Adjust the volume	• ◿ + or - ⓰ 🅵.
Mute the sound	• 🔇 ❶. Press again to restore the sound.
Display the time (only available when teletext is broadcast)	• 🕘 ❹. Press again to make the display disappear.
Tune in a channel temporarily	• »C« ㉔ once for terrestrial channels, twice for cable channels. The indication »C« or »S« for cable channels appears. Enter the channel number with two digits, e.g. for 4, press 0, then 4.
View the input of a connected device (see also page 20)	• ⇥ ⓴ 🅴 repeatedly until the desired input signal appears. Press ▢ ❻ to restore the normal TV picture.
View teletext (see also page 17)	• ☰ ❺ to switch on. Input a page number, using the number buttons ㉓ (e.g. for page 125, press 1, 2 and 5). ▢ ❻ to switch off.
Change the screen mode (see also page 15)	• ⊞ ㉒ repeatedly. The mode changes as follows: Auto Wide ⟶ Smart ⟶ Zoom/PAL Plus ⟶ Wide ⟶ 4:3
Freeze the picture	• ⏸ ❽. Press again to restore the normal TV picture.
Reset picture settings to factory levels	• →•← 🅳.



PROGRAMME TABLE



1	ARD
2	ZDF
3	SWF
4	RTL 2
5	KAB 1
6	PRO 7
7	
8	



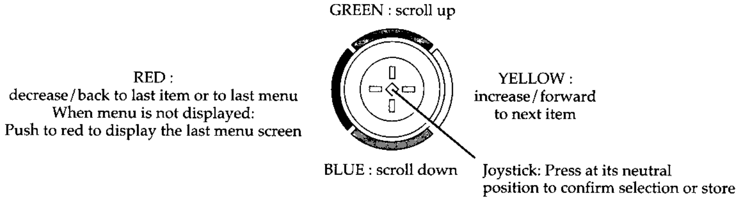
Advanced Operation

Using the Menu System

Use the following buttons on the Remote Commander to operate the Menu system:

1 Press MENU button ⑮ to switch menu on or off.

2 Use the joystick ⑰ as follows:


GREEN : scroll up
RED :
decrease / back to last item or to last menu
When menu is not displayed:
Push to red to display the last menu screen
YELLOW :
increase / forward
to next item
BLUE : scroll down
Joystick: Press at its neutral
position to confirm selection or store

Advanced Presetting

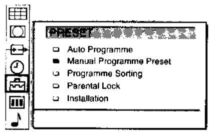
Presetting Channels Manually

Using this function you can preset channels one by one to different programme positions. It is also convenient to allocate programme numbers to video input sources.

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm the selection.

3 Push to blue or green to select »Manual Programme Preset«. Push to yellow to confirm the selection.

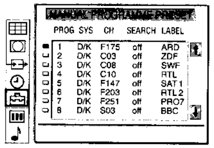


☐ Auto Programme
■ Manual Programme Preset
☐ Programme Sorting
☐ Parental Lock
☐ Installation

4 Push to blue or green to select the programme position (PROG) to which you want to preset a channel. Push to yellow to confirm.

5 Push to blue or green to select the TV broadcast system (SYS) (B/G for western European countries, D/K for eastern European countries) or a video input source (EXT). Push to yellow to confirm.

6 Push to blue or green to select »C« (for terrestrial channels), »S« (for cable channels) or »F« (for channel frequency). Push to yellow to confirm.



PROG	SYS	CH	SEARCH	LABEL
1	D/K	F175	off	ARD
2	D/K	C03	off	ZDF
3	D/K	C08	off	SWF
4	D/K	C10	off	RTL
5	D/K	F147	off	SAT 1
6	D/K	F203	off	RTL 2
7	D/K	F251	off	PRO7
8	D/K	S03	off	BBC

There are two possibilities to preset channels manually:

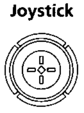
a) You know the channel number or channel frequency.
Please use method »Direct input«.

or

b) You don't know the channel number or frequency.
Please use method »Search«.

continued >>>>>>>>>

Advanced Presetting



7a) Direct Input

For channel numbers you need to input a two digit number, for the frequency a three digit number.

- Push to blue or green to select the first digit of the channel number or frequency. Push to yellow to confirm.
- Push to blue or green to select the second digit of the number or frequency. Push to yellow to confirm. In case of the channel number the search starts.
- Push to blue or green to select the third digit of the frequency number. Push to yellow to start the search of the frequency.
- To continue search for another channel: Push to blue or green.
- To store the selected channel: Press the joystick ⑰.
- Repeat steps 4 to 7a) to preset other channels.

7b) Search

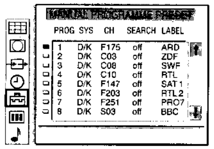
- Push repeatedly to yellow until a blue and a green arrow appear in the section SEARCH.
- Push to blue or green to search for the next available channel.
- To continue search for another channel: Push to blue or green.
- To store the selected channel: Press the joystick ⑰.
- Repeat steps 4 to 7b) to preset other channels.

Captioning a Station Name

Channels are usually automatically labelled during presetting. You can, however, individually name a channel or a video source using up to five characters.

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.



PROG	SYS	CH	SEARCH	LABEL
1	D/K	F175	off	ARD
2	D/K	C03	off	ZDF
3	D/K	C08	off	SWF
4	D/K	C10	off	RTL
5	D/K	F147	off	SAT 1
6	D/K	F203	off	RTL 2
7	D/K	F251	off	PRO7
8	D/K	S03	off	BBC

3 Push to blue or green to select »Manual Programme Preset«. Push to yellow to confirm.

4 Push to blue or green to select the programme position with the channel you want to label. Push to yellow repeatedly until the first element of the position LABEL is highlighted.

5 Push to blue or green to select a letter or a number (select »-« for a blank). Push to yellow to confirm. Select the other four characters in the same way.

6 After selecting all characters, press the joystick ⑰.

7 Repeat steps 4 to 6 to label other channels or video sources.

8 Press MENU ⑮ to restore the normal TV picture.

Skipping Programme Positions

This function enables you to skip unused programme positions when selecting them with the PROGR +/- buttons. However, by using the number buttons you can still select the skipped programme position.

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.

3 Push to blue or green to select »Manual Programme Preset«. Push to yellow to confirm.

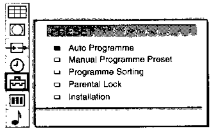
4 Push to blue or green to select the programme position you want to skip. Push to yellow to confirm.

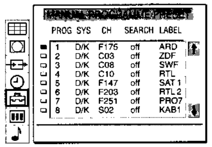
5 Push to blue or green to select »---« in the position SYS (system). Press the joystick ⑰ to confirm.

6 Repeat steps 4 and 5 to skip other programme positions.

7 Press MENU ⑮ to restore the normal TV picture.

Joystick





MANUAL PROGRAMME PRESET

	PROG	SYS	CH	SEARCH	LABEL
■	1	D/K	F175	off	ARD
□	2	D/K	C03	off	ZDF
□	3	D/K	C08	off	SWF
□	4	D/K	C10	off	RTL
□	5	D/K	F147	off	SAT 1
□	6	D/K	F203	off	RTL 2
□	7	D/K	F251	off	PRO7
□	8	D/K	S02	off	KAB1

Sorting Programme Positions

This function enables you to sort the programme positions to a preferable order.

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.

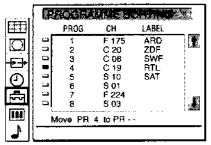
3 Push to blue or green to select »Programme Sorting«. Push to yellow to confirm.

4 Push to blue or green to select the programme position of the channel you want to exchange. Press joystick ⑰ to confirm.

5 Push to blue or green to select the programme position of the second channel. Press joystick ⑰ to confirm. Now the two programme positions are swapped and sorted.

6 Repeat steps 4 and 5 to sort other programme positions.

7 Press MENU ⑮ to restore the normal TV picture.



PROGRAMME SORTING

	PROG	CH	LABEL
□	1	F 175	ARD
□	2	C 20	ZDF
□	3	C 08	SWF
■	4	C 19	RTL
□	5	S 10	SAT
□	6	S 01	
□	7	F 224	
□	8	S 03	

Move PR 4 to PR - -

Using Parental Lock

This function enables you to prevent children watching undesirable broadcasts.

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.

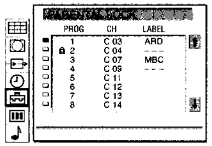
3 Push to green or blue to select »Parental Lock«. Push to yellow to confirm.

4 Push to green or blue to select the channel you want to block. Press the joystick ⑰ to confirm. The symbol 🔒 appears before the programme position to indicate that this channel is now blocked.

5 Repeat step 4 to block other channels.

6 Press MENU ⑮ to restore the normal TV picture.

! To unblock: Select the channel to unblock in the menu »Parental Lock«. Press the joystick ⑰. The symbol 🔒 disappears.



PARENTAL LOCK

	PROG	CH	LABEL
■	1	C 03	ARD
□	🔒 2	C 04	- - -
□	3	C 07	MBC
□	4	C 09	- - -
□	5	C 11	
□	6	C 12	
□	7	C 13	
□	8	C 14	

Using »Further Programme Preset«

Using the menu »Further Programme Preset« you can

a) in case of a strong local aerial signal (striped picture) attenuate the signal individually for each programme position (RF attenuator).

b) individually adjust and store the volume level of each channel (Volume offset).

c) in case of picture or sound distortions use manual fine tuning to obtain a better picture quality. The factory setting is »on« for AFT (Automatic Fine Tuning).

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.

3 Push to blue or green to select »Installation«. Push to yellow to confirm.

4 Push to blue or green to select »Further Programme Preset«. Push to yellow to confirm.

5 Push to blue or green to select the programme position you want. Push to yellow repeatedly to select:
a) ATT (RF attenuator), b) VOL (Volume Offset) or c) AFT (Automatic Fine Tuning). The selected item changes colour.

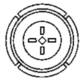
6a) ATT
Push to blue or green to select »ON« for the programme position and press the joystick ⑰ to confirm. Repeat step 6 to attenuate other programme positions.

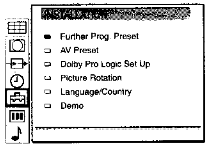
b) VOL
Push to blue or green to adjust the volume for the selected programme position within a range of -7 to +7. Press the joystick ⑰ to confirm. Repeat step 6 to set the volume level for other programme positions.

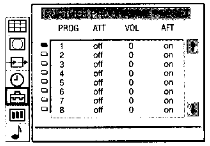
c) AFT
Push to blue or green to fine-tune the channel within a range of -15 to +15. Press the joystick ⑰ to confirm. Repeat step 6 to fine-tune other channels.

7 Press MENU ⑮ to restore the normal TV picture.

Joystick







FURTHER PROGRAMME PRESET

	PROG	ATT	VOL	AFT
●	1	off	0	on
□	2	off	0	on
□	3	off	0	on
□	4	off	0	on
□	5	off	0	on
□	6	off	0	on
□	7	off	0	on
□	8	off	0	on

Using »AV Preset«

Using this function you can preset the desired input source (e.g. ⊕1, RGB signal) to the respective AV input (AV1). In this way a connected VCR switches automatically to the RGB signal. Also you can label the input sources.

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.

3 Push to blue or green to select »Installation«. Push to yellow. Push to blue or green to select »AV Preset«. Push to yellow to confirm.

4 Push to blue or green to select the desired AV input. Push to yellow to confirm.

5 Push to blue or green to select the desired source. Push to yellow to confirm. For the respective AV inputs you have the following choice:
AV1: RGB or AV
AV2: YC2 or AV
AV3: YC3 or AV

6 To label a source: Push to blue or green to select the first character (letter or number, »-« for a blank). Push to yellow to confirm. Select the other four characters in the same way.

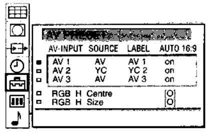
7 For automatic format and PAL plus selection (Auto 16:9):
Push to blue or green to select »On« for the AV input.

8 Press the joystick ⑰ to store.

9 Repeat steps 4 to 8 for the other AV inputs.

10 For RGB input source only: Push to blue or green to select RGB H Centre.
- Push to yellow to confirm.
- Push to blue or green to adjust the centre of the picture in a range of –5 to +5. Press the joystick ⑰ to store.
- Repeat step 10 to adjust RGB H Size.

11 Press MENU ⑮ to restore the normal TV picture.



AV PRESET

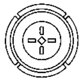
	AV-INPUT	SOURCE	LABEL	AUTO 16:9
■	AV 1	AV	AV 1	on
□	AV 2	YC	YC 2	on
□	AV 3	AV	AV 3	on
□	RGB H Centre			[O]
□	RGB H Size			[O]

Advanced Presetting

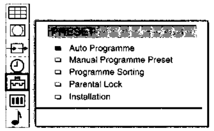
Setting up Dolby Pro Logic

Before listening to Dolby Pro Logic encoded programmes, you should adapt the Dolby Pro Logic features to your individual requirements. This setting up of the levels and modes of the speakers normally is required only when installing the TV and the speakers or when changing the position of the speakers.

Joystick

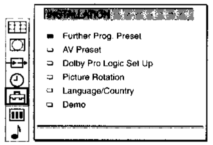


1 Press MENU ⑮.
2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.



PRESET
■ Auto Programme
□ Manual Programme Preset
□ Programme Sorting
□ Parental Lock
□ Installation

3 Push to blue or green to select »Installation«. Push to yellow to confirm.
4 Push to blue or green to select »Dolby Pro Logic Set up«. Push to yellow to confirm.



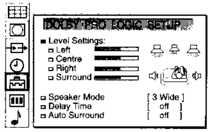
INSTALLATION
■ Further Prog. Preset
□ AV Preset
□ Dolby Pro Logic Set Up
□ Picture Rotation
□ Language/Country
□ Demo

5 Push to yellow. The setting »Left« (sound level of the left speaker) changes colour. You hear a test tone from the left speaker.
6 Push to yellow. Push to red or yellow to adjust the level. Press the joystick ⑰ to confirm.
7 Push to blue or green to select Centre (Centre speaker), Right (right speaker) or Surround (Surround speakers). Repeat step 6 to adjust the sound level of a speaker. Repeat steps 6 and 7 to adjust all sound levels (from your sitting position all levels should be the same). Push to red.
8 Push to blue to select »Speaker mode«. Push to yellow to confirm.
9 Push to blue or green to select:

Normal	- all speakers are activated
Phantom	- centre speaker is not used
Wide	- wider bandwidth sound effect
3 Normal	- surround speakers are not used
3 Wide	- surround speakers are not used, centre speaker carries full frequency response

Press the joystick ⑰ to confirm.

10 Push to blue or green to select »Delay Time«. Push to yellow to confirm. Push to blue or green to select the delay time of the surround speakers (e.g. 20 ms for standard rooms, 30 ms for small rooms).
15 ms ⟶ 20 ms ⟶ 25 ms ⟶ 30 ms
Press the joystick ⑰ to confirm.



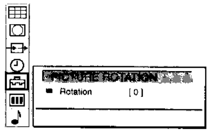
DOLBY PRO LOGIC SETUP
■ Level Settings:
□ Left
□ Centre
□ Right
□ Surround
□ Speaker Mode [3 Wide]
□ Delay Time [off]
□ Auto Surround [off]

11 Push to blue or green to select »Auto Surround«. Push to yellow to confirm. Push to blue or green to select:
On - When receiving a Dolby Surround encoded programme, the TV automatically switches to Dolby Surround sound (depending on availability of service by broadcaster).
Off - normal
Press the joystick ⑰ to confirm.
12 Press the MENU button ⑮ to restore the normal TV picture.

Adjusting the Picture Rotation

If, due to the earth magnetism, the picture slants, you can use this function to readjust the picture.

1 Press MENU ⑮.
2 Push joystick ⑰ to blue or green to select the symbol 🧰 on the menu screen. Push to yellow to confirm.
3 Push to blue or green to select »Installation«. Push to yellow to confirm.
4 Push to blue or green to select »Picture Rotation«. Push to yellow to confirm.



PICTURE ROTATION
■ Rotation [0]

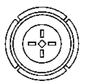
5 Push to yellow. Push to blue or green to adjust the picture rotation. The adjusting range is - 4 to + 4. Press the joystick ⑰ to confirm.
6 Press MENU ⑮ to restore the normal TV picture.

Advanced TV operation

Adjusting the Picture and Sound

Although the picture and sound are adjusted at the factory, you can adjust them to suit your own taste.

Joystick

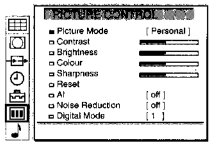


1 Press ● ㉕ (for Picture) or ♪ ⑭ (for Sound)
or
Press MENU ⑮.
Push joystick ⑰ to blue or green to select ▥ for Picture Control or ♪ for Sound Control. Push to yellow to confirm. The menu PICTURE CONTROL or SOUND CONTROL appears.
2 Push to blue or green to select the desired item. Push to yellow to confirm.
3 Push to red or yellow to adjust the selected item. Press the joystick ⑰ to confirm. For the effect of each control, see the following tables.
4 Repeat steps 2 and 3 to adjust other items.
5 Press MENU ⑮ to restore the normal TV picture.

Picture Control

Item	Effect
Picture Mode	• Personal ⟶ Economy (energy saving setting) ⟶ Live ⟶ Sports ⟶ Movie ⟶ Game
Contrast	• Less ——|—— More
Brightness*	• Darker ——|—— Brighter
Colour*	• Less ——|—— More
Hue**	• Greenish ——|—— Reddish
Sharpness*	• Softer ——|—— Sharper
Reset	• Resets picture to the factory preset levels
AI	• Off: Normal On: Automatic optimization of contrast level according to TV signal
Noise Reduction	• Off: Normal On: Reduction of picture noise in case of weak signals
Digital Mode	• 1: Normal 2: LFR (Line Flicker Reduction) off

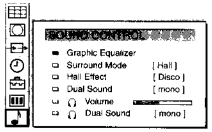
* Only if »Personal« or »Economy« is selected in »Picture Mode«.
** Available for NTSC colour system only.



PICTURE CONTROL
■ Picture Mode [Personal]
□ Contrast
□ Brightness
□ Colour
□ Sharpness
□ Reset
□ AI [off]
□ Noise Reduction [off]
□ Digital Mode [1]

Sound Control

Item	Effect
Graphic Equalizer	• See page 14 for details
Surround Mode	• Off: normal ⟶ Pro Logic ⟶ Hall
Hall Effect (only if Hall is on)	• Choice between different hall effects Church ⟶ Hall ⟶ Stadium ⟶ Disco
Dual Sound	• A: channel 1 or B: channel 2 Stereo ⟶ Mono
Headphones	
🎧 Volume	• Less ——|—— More
🎧 Dual Sound	• A: channel 1 or B: channel 2 ⟶ PAP (if PAP is switched on, you can select the PAP sound for the headphones) ⟶ Stereo ⟶ Mono



SOUND CONTROL
■ Graphic Equalizer
□ Surround Mode [Hall]
□ Hall Effect [Disco]
□ Dual Sound [mono]
□ 🎧 Volume
□ 🎧 Dual Sound [mono]

Using the Graphic Equalizer

Using this function you can individually adjust the sound by cutting and boosting selected frequencies. Also you can select between the following settings:

Flat → User → Vocal → Jazz → Rock → Pop

1 Press MENU ⑮.

2 Push the joystick ⑰ to blue or green to select the symbol ♪ on the menu screen. Push to yellow to confirm.

3 Push to blue or green to select »Graphic Equalizer«. Push to yellow to confirm.

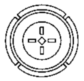
4 Push to yellow. The colour of »Mode« changes. Push to blue or green to select the mode you want.

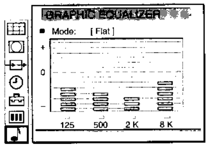
5 If you want to modify a mode, push repeatedly to yellow until the desired bar of a frequency band changes colour. Push to blue or green to change the level of a bar. In this way you can adjust all 4 graphic bars.

6 Press joystick ⑰ to store the adjustment.

7 Press MENU ⑮ to restore the normal TV picture.

Joystick





■ Mode: [Flat]

Presetting Dolby Pro Logic

To enjoy Dolby Surround encoded programmes, preset the setting »Surround Mode« in the menu »Sound Control« to »Pro Logic«. After the end of the broadcast make sure to return the setting to »Off«.

1 Press button ♪ ⑭ on the Remote Commander.

2 Push joystick ⑰ to blue or green to select »Surround Mode«. Push to yellow to confirm.

3 Push to green or blue to select »Pro Logic«. Press the joystick ⑰ to confirm.

4 Press MENU ⑮ to restore the normal TV picture.

Using the Sleep Timer

This function enables you to select a time period after which the TV automatically switches into standby mode.

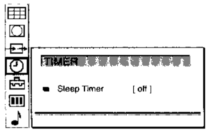
1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol ◷ on the menu screen. Push to yellow to confirm.

3 Push to yellow. Push to blue or green to select the time.
OFF → 10 min → 20 min ....80 min → 90 min.
Press the joystick ⑰ to confirm.

! One minute before the TV switches into standby mode, a message is displayed on the screen.

4 Press MENU ⑮ to restore the normal TV picture.



■ Sleep Timer [off]

Using »Multi PIP«

Using »Multi PIP« you can scan 12 successive TV channels on the screen (Programme Catching) or display 11 successive freeze pictures on the screen (Photo Mode).

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol ⊞ on the menu screen. Push to yellow to confirm.

a) Programme Catching

Push to blue or green to select »Programme Catching«. Press the joystick ⑰. Now a scan of 12 successive programmes (11 still pictures, 1 live picture where the cursor is positioned) is displayed on the screen starting from the programme tuned in. Pushing the joystick to blue, green, red or yellow you can move the cursor in all directions and update the still pictures. When selecting a programme position lower or higher than the 12 displayed ones the programme scanning starts again. Press MENU ⑮ to restore the normal TV picture.

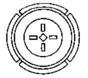
Selecting a programme using Programme Catching:

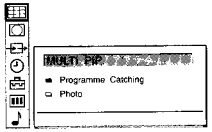
Push the joystick ⑰ to blue, green, red or yellow to select the programme position you want, then press the joystick ⑰. Now the selected programme appears and you are back in the normal TV mode.

b) Photo mode

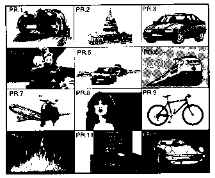
Push to blue or green to select »Photo mode«. Press the joystick ⑰. Now the main picture is displayed as a succession of 11 still pictures and a 12th picture, which is live. Push to blue or green to start the photo mode again. Press the joystick ⑰ to restore the normal TV picture.

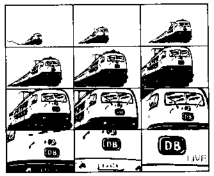
Joystick





■ Programme Catching
□ Photo





Operating Screen Mode

Using Screen Mode you can change the aspect ration of the screen for wide screen effects, operate PAP (picture and picture) or reproduce the main picture image by image (Strobe function).

1 Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select the symbol ▢ on the menu screen. Push to yellow to confirm.

3 Push to blue or green to select »Screen Mode«. Push to yellow to confirm. Push to blue or green to select one of the following modes:

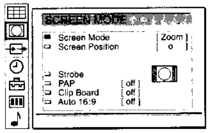
- Smart - imitation of wide screen effect (16:9) for 4:3 broadcasts.
- Zoom - imitation of wide screen effect (16:9) for movies broadcast in cinemascopic format.
- Wide - for 16:9 broadcasts
- 4:3 - conventional 4:3 picture
- AutoWide - automatic selection of the optimum screen ratio (e.g. 4:3 picture automatically changes to Smart mode, 16:9 picture changes to Zoom mode)

Press the joystick ⑰ to confirm the selection.

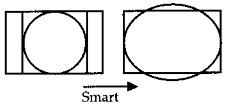
4 Only in Zoom Auto Wide Mode: Changing the Screen position
In Zoom mode parts ot the top and bottom of the picture are cut off. Using »Screen position« you can move the screen up- or downwards in order to see the cut-off parts (e.g. to read subtitles). Push to blue or green to select »Screen position«. Push to yellow to confirm.
Push to blue or green to adjust the screen position (-10 to +10 or -5 to +5).
Press the joystick ⑰ to confirm.

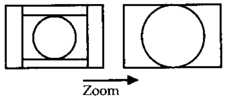
5 Strobe Mode
Push to blue or green to select »Strobe«. Push to yellow to confirm. The TV picture is now displayed image by image, creating a slow motion effect. Push to blue or green to select the speed of the motion. Press the joystick ⑰ to restore the normal TV picture.

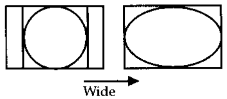
6 PAP (picture and picture)
Push to blue or green to select »PAP«. Push to yellow to confirm. Push to blue or green to select:
1 – PAP screen in 8 : 9 format, 2 – PAP screen in 4 : 3 format, Off – PAP switched off
Press joystick ⑰ to confirm.

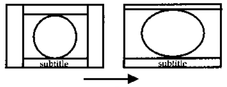


■ Screen Mode [Zoom]
□ Screen Position [0]
□ Strobe
□ PAP [off]
□ Clip Board [off]
□ Auto 16:9 [off]


Smart


Zoom


Wide



Auto Wide

continued >>>>>>>>>

Advanced TV operation

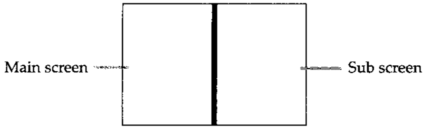
7 *Clipboard*
Push to blue or green to select »Clipboard«. Push to yellow to confirm. Push to blue or green to select »On« to freeze the PAP screen or »Off« for normal picture.
Press joystick ⑰ to confirm.

8 Auto 16:9
Push to blue or green to select »Auto 16:9«. Push to yellow to confirm.
Push to blue or green to select »On« for automatic selection of format or PAL plus in case of PAL plus broadcast or »Off« for normal mode.
Press joystick ⑰ to confirm.

9 Press MENU ⑮ to restore the normal TV picture.

PAP (Picture and Picture)

With PAP you can view two programmes simultaneously (e.g. two TV channels or a video source and a TV channel). The left screen is the main screen with the sound from the speakers, the right screen is the sub screen with the sound selectable via headphones.

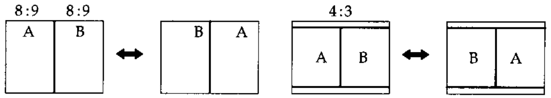


Switching PAP on and off

Press ◰/◨ ⑨ once to display the screens in format 8 : 9, twice to display the screens in format 4 : 3 and three times to switch PAP off.

Selecting a PAP source

Press ⬆ ⑫.
The symbol ⬆ appears in the sub screen. Select the PAP source using PROGR +/– ㉖, the number buttons ㉓ or ⇥ ⑳ (for a video source).

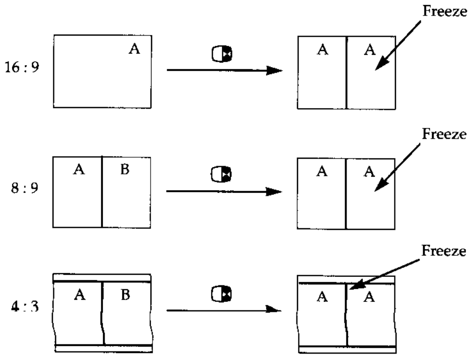


Swapping screens

Press ⧉/⇄ ⑩ once to swap the programmes of the main and sub screens.

Freezing the picture of the sub screen

Press ◨ ⑦ once to freeze the sub screen, twice to return to the normal live picture.

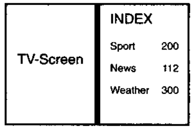


Teletext

Most TV channels broadcast information via teletext. The index page of the broadcaster (usually page 100) informs you about how to use the service. Make sure to use a TV channel with a strong signal, otherwise Teletext errors may occur.

Direct Access Function

Switching Teletext on and off



1 Select the TV channel which carries the teletext service you want to view.

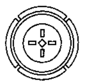
2 Press ⊜ ⑤ once for P&T (Picture and Teletext). The normal TV screen is displayed on the left, the Teletext screen on the right.
Press ⊜ ⑤ twice to get Teletext only.
Press ⊜ ⑤ three times for Mix mode. The normal TV screen and the Teletext screen are overlapped.

3 Press ▭ ⑥ to switch Teletext off.

Selecting a Teletext page

Direct Page Selection
Use the number buttons ㉓ to input three digits of the page number.
If you have made a mistake: Type in any three digits, then reenter the correct page number.

Joystick



Page Catching
1 Select a teletext page with page numbers (e.g. index page).

2 Press the joystick ⑰. »Page Catching« is displayed at the top of the page.
Push joystick ⑰ to blue or green to select the page you want. Press the joystick ⑰.
The requested page is displayed after some seconds.
Press ⊜ ⑤ to resume normal teletext reception.

Accessing the next or preceding page

Press ⏶ ㉖ (Page +) or ⏷ (Page -).

Freezing a teletext subpage

Press ⊕ ⑳. The symbol ⊕ is displayed.
Press ⊜ ⑤ to resume normal teletext reception.

Revealing hidden information (e.g. for a quiz)

Press ? ⑲. Press again to cancel.

Using Fastext

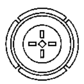
(only available, if the TV station broadcasts Fastext signals)

With Fastext you can access pages with one key stroke. When Fastext is broadcast, a colour-coded menu appears at the bottom of the screen. The colours of this menu correspond to the red, green, yellow and blue marks on the Remote Commander. Push the joystick ⑰ to the colour mark which corresponds to the colour-coded menu. The page is displayed after some seconds.

continued >>>>>>>>>

Using the Teletext Menu

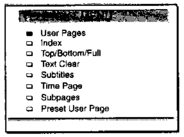
Joystick



Your TV is provided with a menu-guided teletext system. When teletext is switched on, you can use the buttons for menu operation to operate the teletext menu.
Select the teletext menu functions as follows:

1 Press MENU ⑮. The menu is superimposed on the teletext display.

2 Push the joystick ⑰ to blue or green to select the teletext function you want.
Push to yellow to confirm the selection.

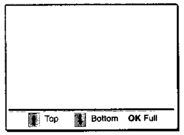


■ User Pages
□ Index
□ Top/Bottom/Full
□ Text Clear
□ Subtitles
□ Time Page
□ Subpages
□ Preset User Page

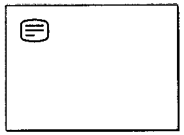
USER PAGES/PRESET USER PAGES
See page 19 for information about presetting and operating the user pages.

INDEX
The index gives you an overview of the contents of the teletext you are using.

TOP/BOTTOM/FULL
For convenient reading of a teletext page you can enlarge the teletext page. After selecting the function, an information line »Top ↑ Bottom ↓ OK Full« is displayed. Push joystick ⑰ to green to enlarge the upper half, push to blue to enlarge the lower half. Press the joystick ⑰ to resume the normal display. Press ⊜ ⑤ to resume normal teletext reception.



TEXT CLEAR
After selecting the function, you can watch a TV programme while waiting for a requested teletext page to be captured. When the page is available, the symbol ⊜ changes colour. Press ⊜ ⑤ to view the requested page.



SUBTITLES
Check with your teletext service for information about subtitled TV programmes. After selecting the function the subtitles are displayed.

TIME PAGE
Check with your teletext service about the availability of time coded pages.
If available, you can call up a page (e.g. an alarm page) at a certain time.

1 Select TIME PAGE in the teletext menu.
Push joystick ⑰ to yellow. An information window is displayed. Push to blue or green to select »On«. Push to yellow.

2 Use the number buttons ㉓ to enter the three digits of the page you want (e.g. 301).
Push to yellow after each digit.

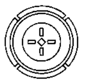
3 Use the number buttons ㉓ to enter the four digits of the desired time (e.g 18-54).
Push to yellow after each digit. Press joystick ⑰ to confirm. Press MENU ⑮. The time is displayed in the top left-hand corner of the screen.
At the requested time the page is displayed.

SUBPAGE
Using this function you can select a particular teletext page from several subpages (e.g. page 2 of 6 pages in total). After selecting the function an information line is displayed. Use the number buttons ㉓ to enter the four digits (e.g. enter 0002 for the second page of a sequence).
To cancel the request: Push joystick ⑰ to red and then to yellow.

continued >>>>>>>>>

User Page Bank System

Joystick



You can store up to 6 of your favourite teletext pages per Teletext service. In this way you have quick access to the pages you frequently use.

Storing pages

1 Press ⊜ ⑤ to switch Teletext on. Press MENU ⑮.

2 Push joystick ⑰ to blue or green to select »Preset User Pages«.
Push to yellow to confirm.

3 Push to blue or green to select the bank (from A to E) you want.
Push to yellow to confirm.

4 Push to blue or green to select the three digits of your first favourite page.
Push to yellow after each digit. Push to yellow to confirm.

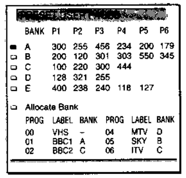
5 Repeat step 4 for the other 5 favourite pages. If you do not want to preset all 6 page numbers push to yellow without inserting any number. After finishing the presetting, press the joystick ⑰.

6 Push to blue or green to select »Allocate Bank«. Push to yellow to confirm.

7 Push to blue or green to select the programme position of the channel which carries the teletext service for which you have selected your favourite pages.
Push to yellow to confirm.

8 Push to blue or green to select the bank from step 3. Press the joystick ⑰ to confirm.

9 Repeat steps 3 to 8 for the other 4 banks available.



	BANK	P1	P2	P3	P4	P5	P6
■	A	300	255	456	234	200	179
□	B	200	120	301	303	550	345
□	C	100	220	300	444		
□	D	128	321	255			
□	E	400	238	240	118	127	

□ Allocate Bank

PROG	LABEL	BANK	PROG	LABEL	BANK
00	VHS	–	04	MTV	D
01	BBC1	A	05	SKY	B
02	BBC2	C	06	ITV	C

Displaying User Pages

1 Press MENU ⑮.

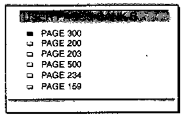
2 Push joystick ⑰ to blue or green to select »User Pages«. Push to yellow to confirm.

3 Push to blue or green to select the page you want. Press the joystick ⑰.
The page is displayed after some seconds.

or

1 Press ⟐ ㉑.

2 Push joystick ⑰ to blue or green to select the page you want. Press the joystick ⑰.
The page is displayed after some seconds.



■ PAGE 300
□ PAGE 200
□ PAGE 203
□ PAGE 500
□ PAGE 234
□ PAGE 159

Optional Equipment

Connecting Optional Equipment

You can connect a wide range of optional equipment to your TV. Refer to the illustrations on the back lap page of this Instruction Manual.

Symbol	Acceptable input signals	Available output signals
⇥⁂1	Normal audio/video and RGB	Audio/video from TV tuner
↪2/⇥Ⓢ2	Normal audio/video and S video	Audio/video from selected source
⇥3, ⇥3	Normal audio/video and S video	No output
↪	No inputs	Audio from selected source

About S video input
Video signals may be separated into Y (luminance) and C (chrominance) signals. Separating the two signals prevents interference and thus improves the picture quality.

Tips:
- If the picture or sound is distorted, move the VCR away from the TV.
- When connecting a monaural VCR, connect only the white jack to both the TV and VCR.

Selecting Input and Output Signals

a) Direct Access Buttons

Selecting the Input
Press ⇥ ⓴ 🅴 repeatedly to select one of the following input modes:

Symbol on the screen	Input signals	
⇥1	Audio/video through Euro AV connector	🅹
⇥⁂	RGB through Euro AV connector	🅹
⇥2	Audio/video through Euro AV connector	🅻
⇥Ⓢ2	S video through Euro AV connector	🅻
⇥3	Audio/video through the phono jacks	🅲
⇥Ⓢ3	S video through the 4 pin DIN	🅱

Press ▢ ❻ to restore the normal TV picture.

Selecting the Output from Euro AV connector ↪2/⇥Ⓢ2 🅻
Press ↪ ⓳ repeatedly to select one of the following output sources for the connector ↪2/⇥Ⓢ2 🅻:

Symbol on the screen	↪2/⇥Ⓢ2 🅻 connector output signal	
1 ↪	Audio/video from Euro AV connector	🅹
2 ↪	Audio/video from Euro AV connector	🅻
2 Ⓢ↪	Audio/video from Euro AV connector	🅻
3 ↪	Audio/video from the phono jacks	🅲
3 Ⓢ↪	Audio/video from the 4 pin DIN	🅱
TV	Audio/video from the aerial terminal ╗╔	🅺

Optional Equipment

b) Using the Menu »Video Connection«

1 Press MENU ⓯.

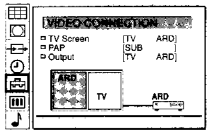
2 Push joystick ⓱ to blue or green to select the symbol ⇥ on the menu screen.
Push to yellow to confirm.

3 Push to blue or green to select »TV screen« (input source for TV-screen), PAP (source for PAP sub screen), or »Output« (output source for ↪2/⇥Ⓢ2 🅻).
Push to yellow to confirm.
You can select between the following sources:
• TV: TV-tuner • YC: S video signal • AV: Audio/Video • Sub: 2nd TV-tuner

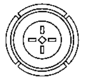
TV screen: TV, AV1, RGB, AV2, YC2, AV3, YC3
PAP: Sub, AV1, AV2, YC2, AV3, YC3
Output: TV, AV1, AV2, YC2, AV3, YC3

4 Push to blue or green to select the desired source. Press joystick ⓱ to store.

5 Press MENU ⓯ to restore the normal TV picture.



Joystick



Remote Control of other Sony Equipment

Using the buttons ❷ on the Remote Commander you can control other Sony equipment.

1 Set the selector VTR 1 2 3 MDP according to the equipment you want to control.
VTR 1: Beta VCR
VTR 2: 8mm VCR
VTR3: VHS VCR
MDP: Video Disk Player

2 Use the buttons ❷ on the Remote Commander to operate the equipment.

Tips
- If your video equipment has a COMMAND MODE selector, set this selector to the same position as the VTR 1 2 3 MDP selector on the TV Remote Commander.
- If the equipment does not have a certain function, the corresponding button on the Remote Commander does not work.

Additional Information

Troubleshooting

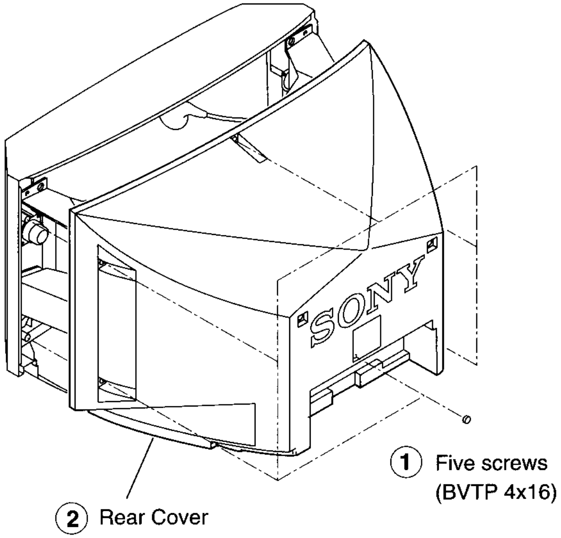
Here are some simple solutions to problems which may affect the picture and sound.

Problem	Solution
No picture (screen is dark), no sound	• Plug the TV in. • Press ⏻ 🅸 on the TV. (If ⏻ indicator 🅷 is on, press ▢ ❻ or a programme number ㉓ on the Remote Commander.) • Check the aerial connection. • Check if the selected video source is on. • Turn the TV off for 3 or 4 seconds and then turn it on again using ⏻ 🅸.
Poor or no picture (screen is dark), but good sound	• Press ● ㉕ to enter the PICTURE CONTROL menu and adjust »Brightness«, »Contrast« and »Colour«.
Poor picture quality when watching an RGB video source	• Press ⇥ ⓴ repeatedly to select ⇥⁂.
Good picture but poor or no sound	• Press ◢ +⓰. • If 🔇 is displayed on the screen, press 🔇❶. • Check the connections of the loudspeakers.
No colour for colour programmes	• Press ● ㉕ to enter the PICTURE CONTROL menu, select RESET, then press joystick ⓱.
Remote Commander does not function.	• Replace batteries.

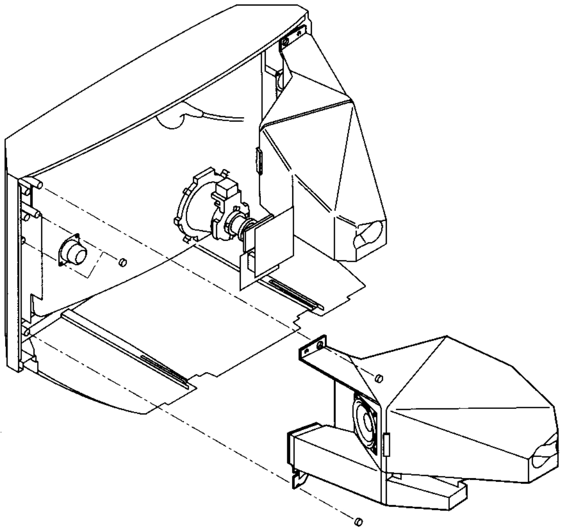
If you continue to have problems, have your TV serviced by qualified personnel. Never open the casing yourself.

SECTION 2
DISASSEMBLY

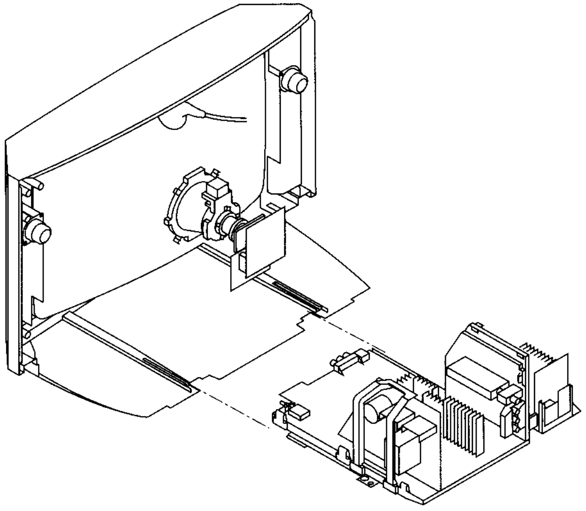
2-1. REAR COVER REMOVAL


① Five screws
(BVTP 4x16)
② Rear Cover

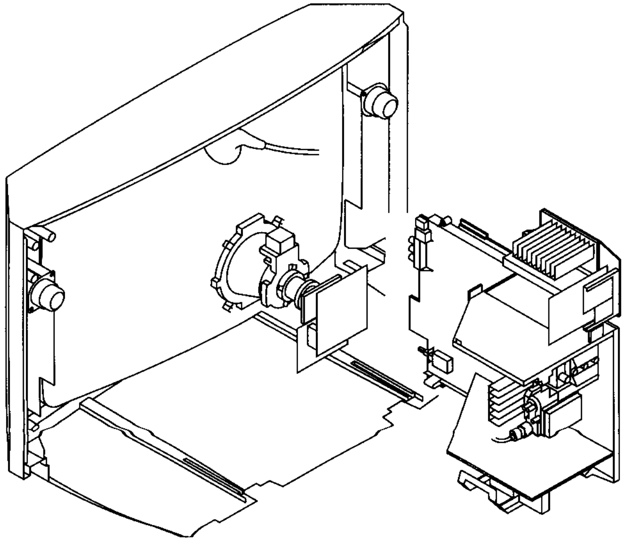
2-2. SPEAKER REMOVAL



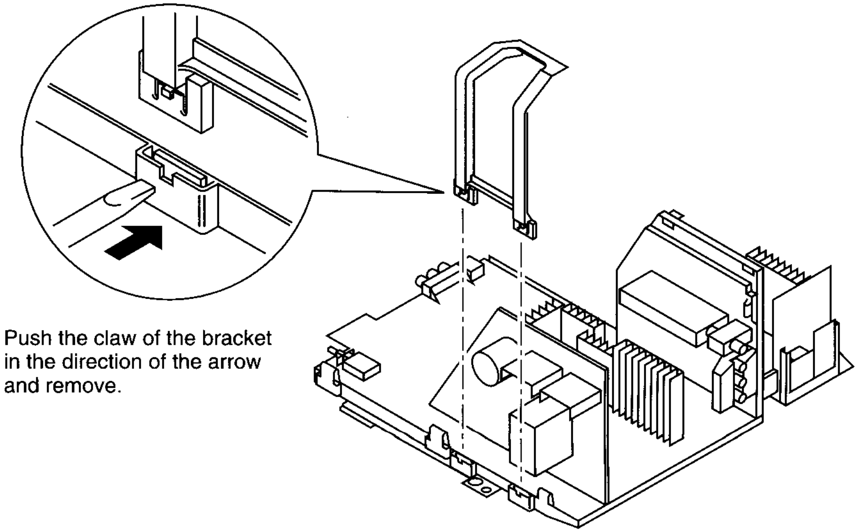
2-3. CHASSIS ASSY REMOVAL



2-4. SERIVCE POSITION

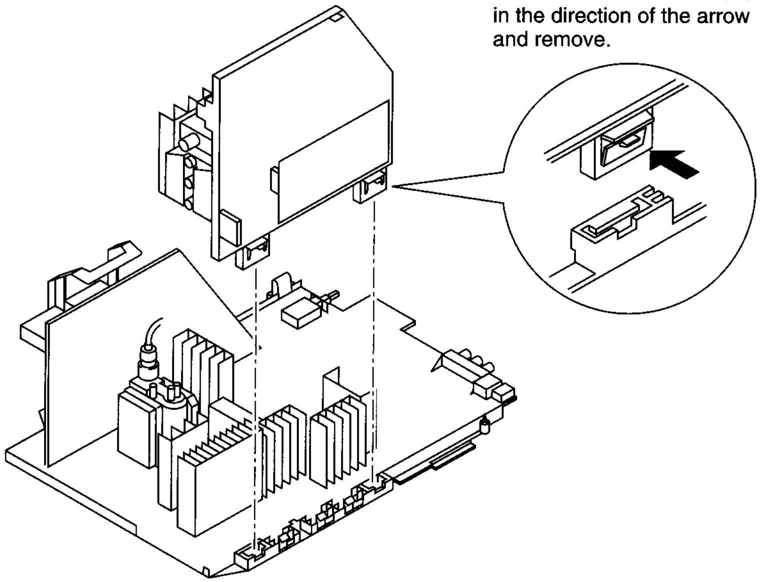


2-5. G BOARD REMOVAL



Push the claw of the bracket in the direction of the arrow and remove.

2-6. A BOARD REMOVAL

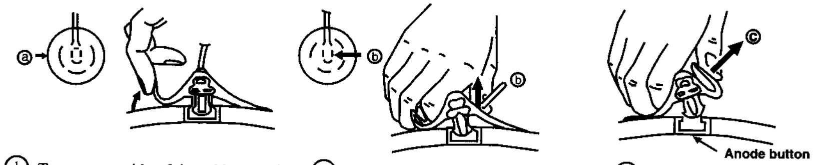


Push the claw of the bracket in the direction of the arrow and remove.

• REMOVAL OF ANODE-CAP

Note: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT, after removing the anode.

* **REMOVING PROCEDURES.**



ⓐ
ⓑ
ⓑ
ⓒ
Anode button

① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ

② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ

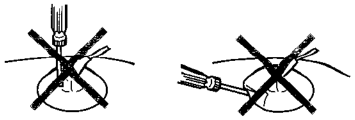
③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ⓒ

• HOW TO HANDLE AN ANODE-CAP

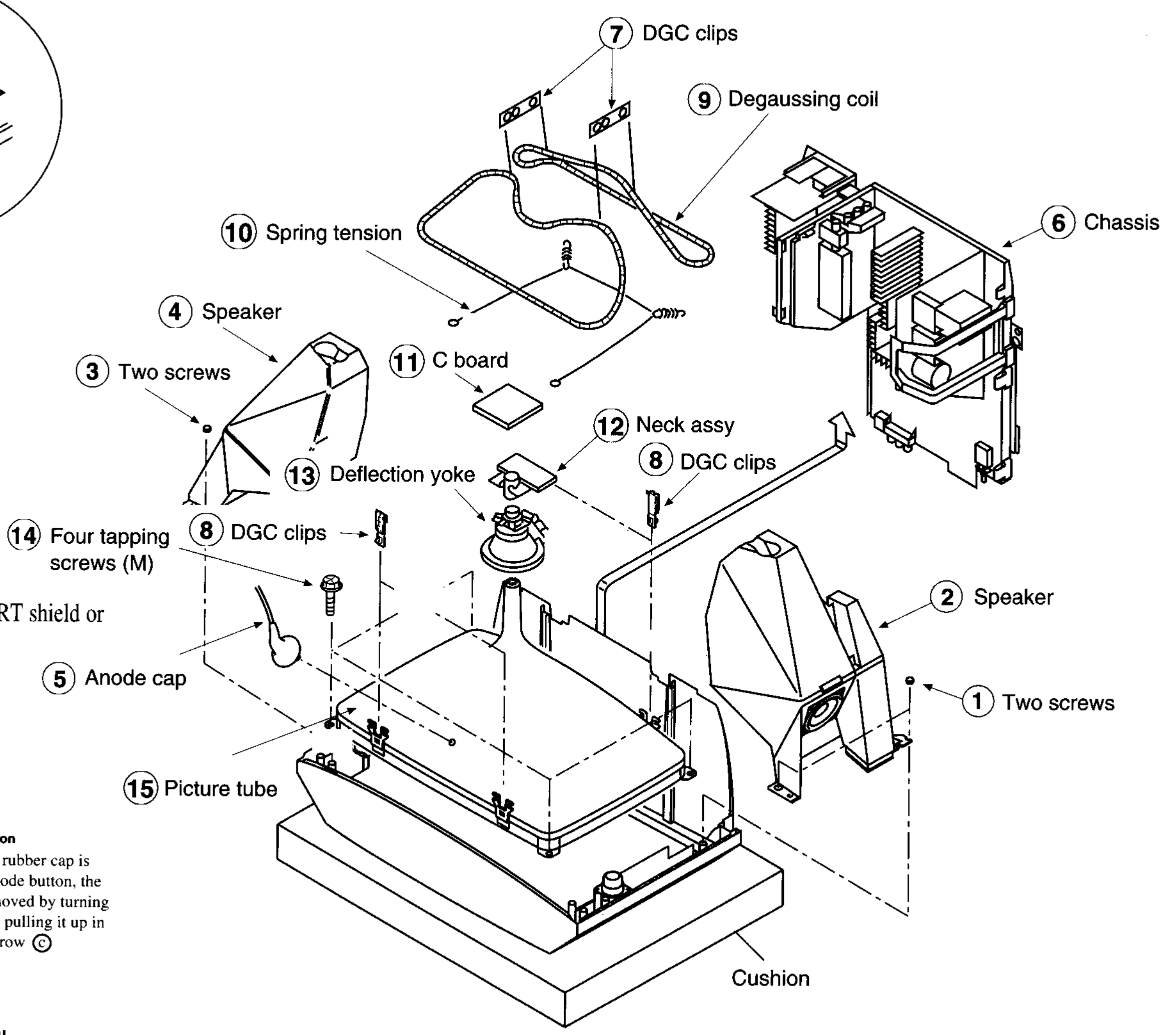
① Don't damage the surface of anode-cap with sharp shaped material !

② Don't press the rubber hardly not to hurt inside of anode-caps !
A metal fitting called as shatter-hook terminal is built into the rubber.

③ Don't turn the foot of rubber over hardly !
The shatter-hook terminal will stick out or damage the rubber.



2-7. PICUTRE TUBE REMOVAL



⑦ DGC clips
⑨ Degaussing coil
⑩ Spring tension
⑥ Chassis
④ Speaker
⑪ C board
③ Two screws
⑫ Neck assy
⑧ DGC clips
⑬ Deflection yoke
⑭ Four tapping screws (M)
⑧ DGC clips
② Speaker
⑤ Anode cap
① Two screws
⑮ Picture tube
Cushion

REMOVAL AND REPLACEMENT OF THE MAIN-BRACKET BOTTOM PLATES.

(1) REMOVING THE PLATES

In the event of servicing being required to the solder side of the D Board printed circuit, the bottom plates fitted to the main chassis bracket require to be removed. This is performed by cutting the gates with a sharp wire cutter at the locations shown and indicated by arrows.

Note : There are 5 plates fitted to the main bracket and secured by 4 or 6 gates. Only remove the necessary plate to gain access to the circuit board.

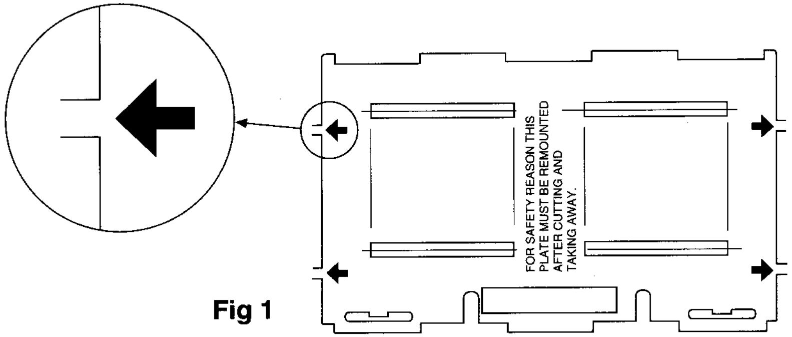

FOR SAFETY REASON THIS PLATE MUST BE REMOUNTED AFTER CUTTING AND TAKING AWAY.

Fig 1

⚠ For safety reasons, on no account should the plates be removed and not refitted after servicing.

(2) REFITTING THE PLATES

Because the plates differ in size it is important that the correct plates are refitted in their original location.
The plates are identified by markings A-B-C-D-E on their top side.

1. Identify the plate by locating its marking.
2. Turn the plate over noting where the marking is located.
3. Locate the corresponding marking indicated on the main chassis bracket. See Fig 2.
4. Refit the plate as indicated in Fig 3 with the markings located next to each other.

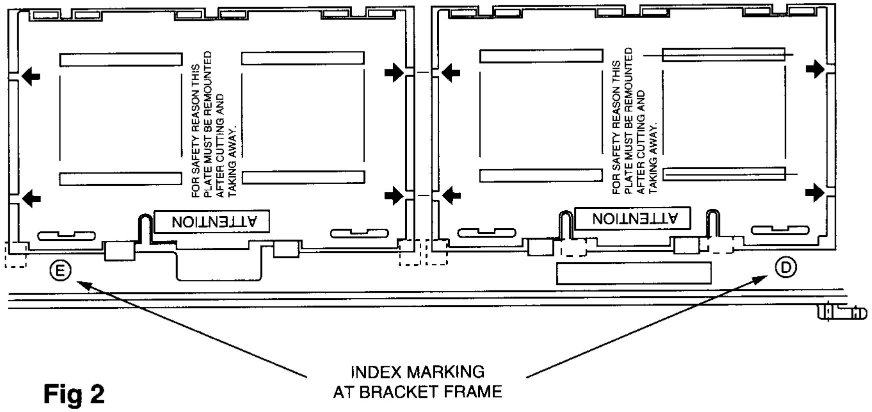

FOR SAFETY REASON THIS PLATE MUST BE REMOUNTED AFTER CUTTING AND TAKING AWAY.
ATTENTION
FOR SAFETY REASON THIS PLATE MUST BE REMOUNTED AFTER CUTTING AND TAKING AWAY.
ATTENTION
Ⓔ
Ⓓ
INDEX MARKING AT BRACKET FRAME

Fig 2

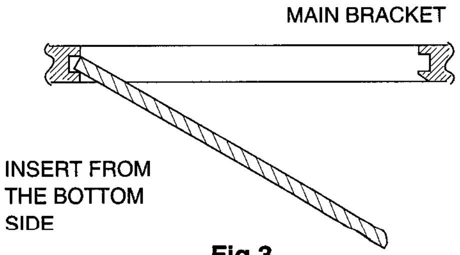

MAIN BRACKET
INSERT FROM THE BOTTOM SIDE

Fig 3

In the event of the plates requiring to be removed at a later stage, this can be achieved by inserting a screwdriver in the snap-recess indicated as in Fig 4 and lifting out.

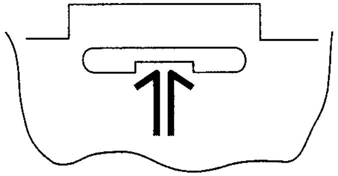


Fig 4

SECTION 3
SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there are specific instructions to the contrary, carry out these adjustment with the rated power supply.
- Unless there are specific instructions to the contrary, set the controls and switches as follows.

Contrast	normal
Brightness	normal

- Carry out the following adjustments in this order:

3-1. Beam landing
3-2. Convergence
3-3. Focus
3-4. White balance

Note: Testing equipment required.
1. Color bar/pattern generator
2. Degausser
3. Vector scope

3-1. BEAM LANDING

Preparation:

1. In order to reduce the influence of geomagnetism on the set's picture tube face it in an easterly or westerly direction.
2. Switch on the set's power and degauss with the degausser.

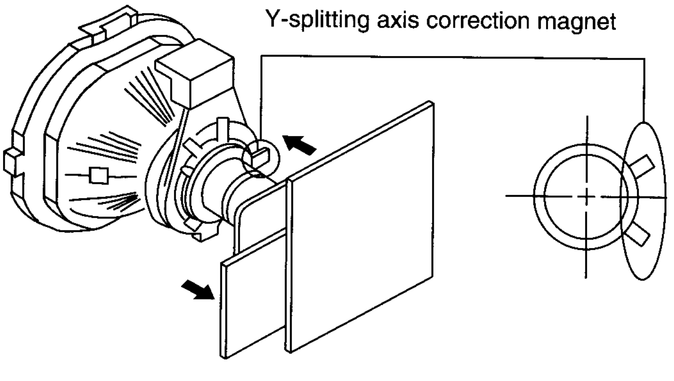
(1) Adjustment of Correction Magnet for Y-Splitting Axis

1. Input a crosshatch signal from the pattern generator.
2. Picture control is minimum and brightness control is still normal.
3. Position the neck assy as shown in Fig. 3-2.
4. Move the deflection yoke forward to touch the CRT and it stands up rightly.
5. Adjust the upper pin and the lower pin symmetrically by opening or closing the Y-splitting axis correction magnets on the neck assy.
6. Return the deflection yoke to its original position.

(2) Landing

Note: Before carrying out the following adjustments adjust the magnets as indicated below (See Fig.3-3).

1. Input an all-white signal from the pattern generator. Maximize the picture setting and adjust the brightness setting.
2. Rough-adjust the focus and horizontal convergence.
3. Loosen the deflection yoke screws, align the purity adjustment knob to the central position. (See Fig. 3-1)
4. Switch from the all-white pattern to an all-green pattern.
5. Move the deflection yoke backwards and adjust with the purity magnet so that the green is at the center and it aligns symmetrically. (See Fig. 3-4)
6. Move the deflection yoke forward and adjust so that entire screen becomes green.
7. Switch the raster signal to red, then to blue and verify the landing condition.
8. When the position of the deflection yoke has been determined, fasten the deflection yoke with the screw.
9. If the beam does not land correctly in all the corners, use magnets to correct it. (See Fig. 3-5)



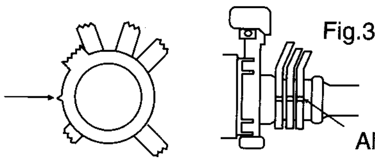


Fig.3-3

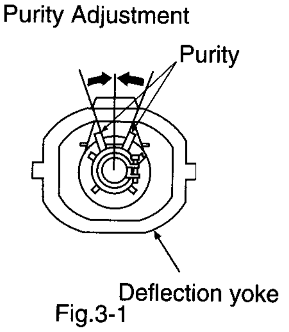
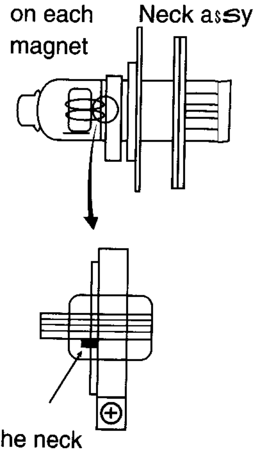


Fig.3-1



Align the bottom edge of the neck assy with the G3 hole center.

Fig.3-2

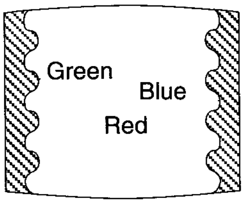

Green
Blue
Red

Fig.3-4

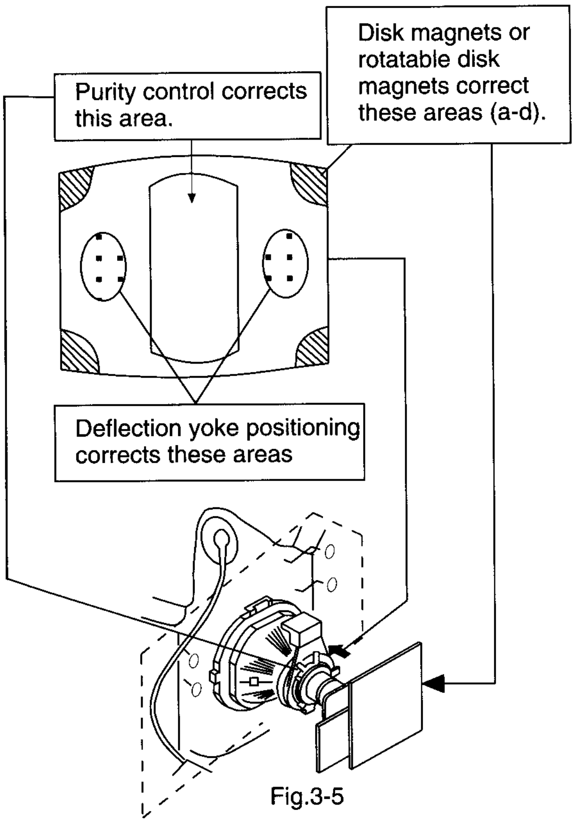
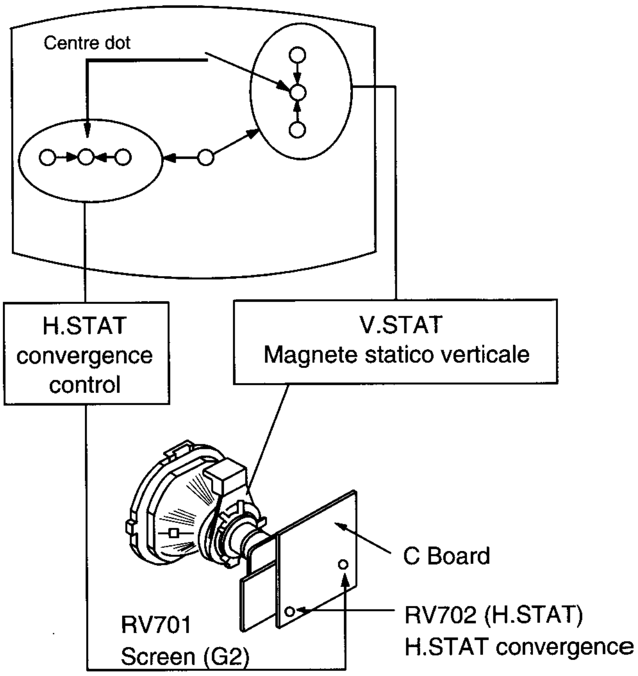

Purity control corrects this area.
Disk magnets or rotatable disk magnets correct these areas (a-d).
Deflection yoke positioning corrects these areas

Fig.3-5

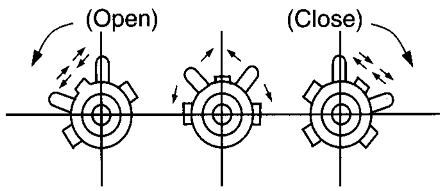
3-2. CONVERGENCE

(1) Screen center convergence (Static convergence)

1. Input a dot signal from the pattern generator. Normalize the picture setting.
2. (Moving horizontally), adjust the H.STAT control so that the horizontal red, green and blue dots coincide at the center of screen.
3. (Moving vertically), adjust the V.STAT magnet so that the vertical red, green and blue points coincide at the center of screen.

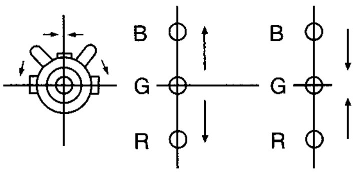

Centre dot
H.STAT convergence control
V.STAT Magnete statico verticale
C Board
RV701 Screen (G2)
RV702 (H.STAT) H.STAT convergence

- If the horizontal dots are unable to coincide with the variable range of the H.STAT convergence, adjust together with the V.STAT convergence while tracking. (Adjust the convergence by tilting the V.STAT convergence or by opening or closing the V.STAT convergence.)

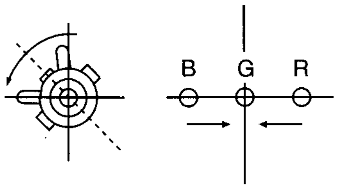


4. Movement of the red, green and blue dots by tilting the V.STAT magnet and by opening or closing the V.STAT magnet.

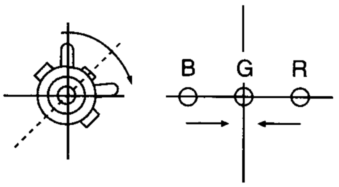
① By opening or closing the V.STAT magnet, the red, green and blue points move as shown below



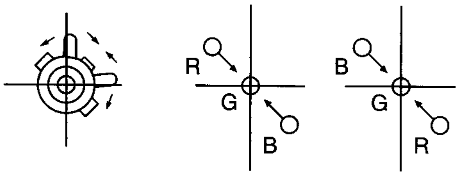
② By rotating the V. STAT magnet counterclockwise, the red, green and blue dots move as shown below.



③By rotating the V.STAT magnet clockwise, the red, green and blue dots move as shown below.



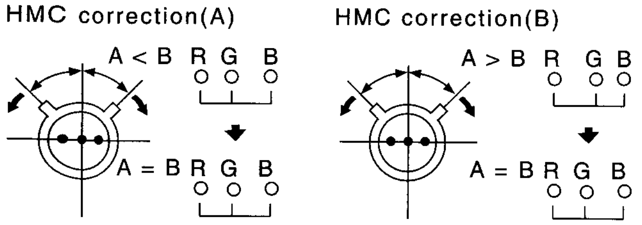
④By opening or closing the V.STAT magnet, the red, green and blue dots move as shown below.



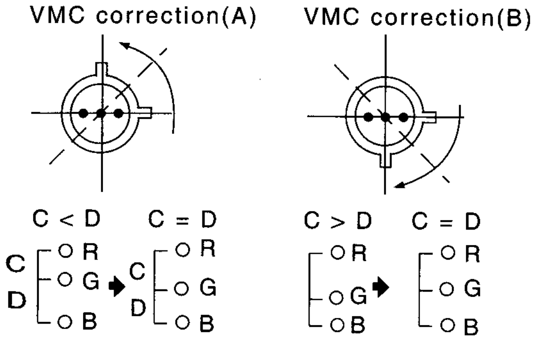
- If the blue dot does not coincide with the red and green points, correct the points by using the BMC (Hexapole) magnet.

⑤Correction for HMC (horizontal mis-convergence) and VMC (vertical mis-convergence) by using the BMC (Hexapole) magnet.

①HMC correction by BMC (Hexapole) magnet and movement of the electronic beam.


HMC correction(A)
HMC correction(B)
A < B
R G B
A = B
R G B
A > B
R G B
A = B
R G B

②VMC correction by BMC (Hexapole) magnet and movement of the electronic beam.


VMC correction(A)
VMC correction(B)
C < D
C = D
C > D
C = D
C
D
R
G
B
C
D
R
G
B
R
G
B
R
G
B

Layout of each control

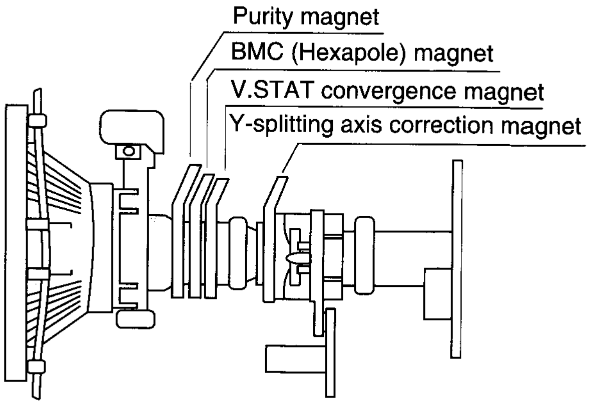
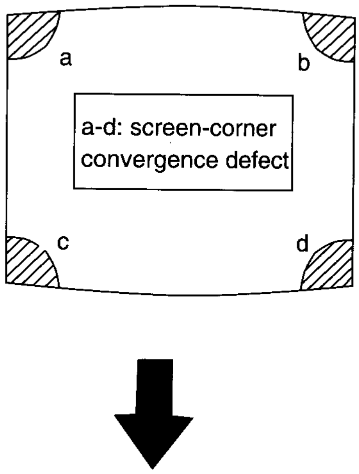
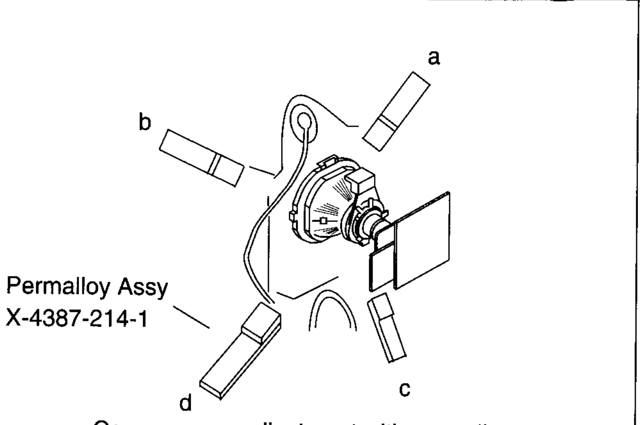

Purity magnet
BMC (Hexapole) magnet
V.STAT convergence magnet
Y-splitting axis correction magnet

Fig.3-5

2. If you are unable to adjust the corner convergence properly, correct them with the use of permalloys.

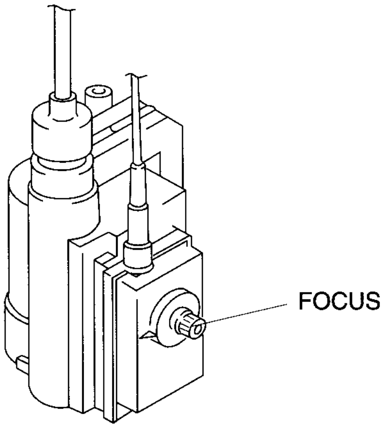

a
b
a-d: screen-corner convergence defect
c
d


a
b
Permalloy Assy
X-4387-214-1
d
c

Convergence adjustment with permalloy

3-3. Focus

1. Receive a television broadcast signal.
2. Normalize the picture setting.
3. Adjust the focus control on the flyback transformer for the best focus at the center of the screen.
   Bring only the center area of the screen into focus, the magenta-ring appears on the screen. In this case, adjust the focus to optimize the screen uniformly.



3-4. Screen (G2), White balance (Adjustment in the service mode with remote commander)

G2 adjustment (RV702)

1. Input a dot signal from the pattern generator.
2. Set the Picture, Brightness and Colour to minimum.
3. Apply 170V DC from an external power supply to the R, G and B cathodes of the CRT.
4. Whilst watching the picture, adjust the G2 control RV701 [SCREEN] on the C board to the point just before the return lines disappear.

White balance adjustment

1. Receive an all-white signal.
2. Enter into the Service Mode by pressing ' TEST ', ' TEST ' and ' MENU' on the Service Commander.
3. Select ' VIDEO PROC. ' from the on screen menu display and press OK .
4. The ' VIDEO PROC TDA4780' menu will appear on the screen.

Video Proc. TDA4780

Item No	Adjustment item	Data Amount
1	BRT	USER CONTROL
2	COL	USER CONTROL
3	PIC	USER CONTROL
4	HUE	USER CONTROL
5	R GAIN	31
6	G GAIN	Adj
7	B GAIN	Adj
8	R LVL REF	31
9	G LVL REF	Adj
10	B LVL REF	Adj
11	PEAK DRV LIMIT	63
12	GAMMA	31
13	SCP ON = 3LEV OFF = 2LEV	ON
14	DELAY	OFF

5. Set picture to MAX.
6. Set the ' R GAIN ' to 25.
7. Adjust the ' G GAIN ' and ' B GAIN ' so that the white balance becomes optimum.
8. Press the OK button to write the data for each item.
9. Set picture to MIN.
10. Set the ' R LVL REF ' to 31.
11. Adjust ' G LVL REF ', and ' B LVL REF ' with the left and right buttons so that the white balance becomes optimum.
12. Press the OK button to write the data for each item.

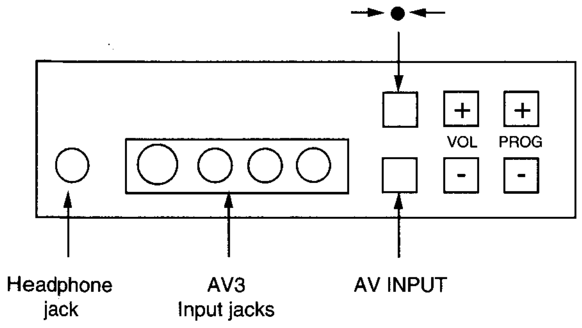
SECTION 4
CIRCUIT ADJUSTMENTS

4-1. ELECTRICAL ADJUSTMENTS

Service adjustment to this model can be performed with the supplied remote commander, RM-862.

HOW TO ENTER INTO SERVICE MODE

1. Turn on the main power switch of the set while pressing the PROG + (plus) and PROG - (minus) buttons on the front panel.



2. "TT" will appear on the upper right corner of the screen.
3. Press " MENU " on the commander to get the service menu on screen.

DEVICES	
Init TV	
Pip, Lumisponder & Autoside	
Sub Adjust	
Video Proc	TDA4780
Col Dec Main	TDA9144
Deflect. Cont	SDA9361
Col Dec Sub	TDA9143
Feature Box	S87C654
AI	TDA9170
DA	SDA9280
Single PIP	SDA9288
Sound	
Line23 det	

4. Push the joystick up (green) or down (blue) on the remote commander to select the adjustment item.
5. Press the center button to proceed to the next menu.
6. If the adjustment item is 'Video Proc.', push the down button to move to 'Video Proc.'.
7. The Menu as indicated in Fig 4-3 will appear on the screen.

8. Move the joystick up or down to move to the adjustment item and press the center (OK) button.
9. Change the data in order to comply with each standard.

Item No	Adjustment item	Data Amount
1	BRT	USER CONTROL
2	COL	USER CONTROL
3	PIC	USER CONTROL
4	HUE	USER CONTROL
5	R GAIN	31
6	G GAIN	Adj
7	B GAIN	Adj
8	R LVL REF	31
9	G LVL REF	Adj
10	B LVL REF	Adj
11	PEAK DRV LIMIT	63
12	GAMMA	31
13	SCP ON = 3LEV OFF = 2LEV	ON
14	DELAY	OFF
15	DATA BUFF	OFF
16	NTSC MATRIX	OFF
17	HDTV	OFF
18	FSBL	OFF
19	AUTO CUT OFF	ON
20	FSW 2 DIS	OFF
21	FSW 2	OFF
22	FSW 1 DIS	OFF
23	FSW 1	OFF
24	ADAPT BLACK	OFF
25	Y HIGH 1V	OFF
26	MOD2	OFF
27	BLUE STRETCH	OFF
28	VM OUT	OFF
29	PEAK DRV ABS	ON
30	TIME CNST PEAK LIMIT	OFF

Fig. 4-3

SDA9361 (VIDEO PROC.)

Item No	Adjustment item	Data Amount
1	HDE	ON
2	VR	0
3	RABL	ON
4	BLK DIS	OFF
5	2FH 2*LINE FRQ	ON
6	STANDBY MODE	OFF
7	VERTICAL	ON
8	BSE BLK SELECT	OFF
9	SSE START SCAN	OFF
10	SRSE START RED SCAN	OFF
11	GBE GUARD BAND	OFF
12	STE SCAN TIME TABLE	OFF
13	NSA SELF ADAPTION	ON
14	V SHIFT	ADJ
15	V SIZE	ADJ
16	V LIN	ADJ
17	V S-COR	ADJ
18	V EHT COMP	25" = 78 29" = 100 28" = 36 32" =
19	H SIZE	ADJ
20	PIN PHASE	ADJ
21	PIN AMP	ADJ
22	UP COR PIN	ADJ
23	LOW COR PIN	ADJ
24	H EHT COMP	25" = 78 29" = 100 28" = 36 32" =
25	H SHIFT	ADJ
26	V ANGLE	ADJ
27	V BOW	ADJ
28	PWM START	0

Item No	Adjustment item	Data Amount
29	D/A	0
30	V BLK TIME	0
31	H BLK TIME	0
32	STAR V SCAN	0
33	H BLK PHASE	0
34	V SCAN WIDTH 0	0
35	V SCAN WIDTH 1	0
36	GUARD BAND	0
37	START RED SCAN	0
38	NUMBER FIELDS	1
39	NI NON INTERLACE	OFF
40	NR VSYNC NOISE RED	ON
41	SCC WITH VBL	ON
42	MIN LINES/FIELD	0
43	MAX LINES/FIELD	0
44	AFC EHT COMP	0
45	PLL FREQ	6
46	VCR	ON
47	GEN MOD	OFF
48	HSWID	ON
49	INT H PHASE	239
50	PWM WIDTH	0
51	NOISY VCR	OFF
52	KILLZIP	OFF
53	TC3RD	OFF
54	BANDGAP 4 OFF	OFF
55	BANDGAP OFF	OFF
56	BANDGAP	0

TDA4780 (VIDEO PROC.)

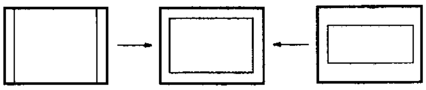
Item No	Adjustment item	Data Amount
1	BRT	USER CONTROL
2	COL	USER CONTROL
3	PIC	USER CONTROL
4	HUE	USER CONTROL
5	R GAIN	25
6	G GAIN	Adj
7	B GAIN	Adj
8	R LVL REF	31
9	G LVL REF	Adj
10	B LVL REF	Adj
11	PEAK DRV LIMIT	0
12	GAMMA	31
13	SCP ON = 3LEV OFF = 2LEV	ON
14	DELAY	OFF
15	DATA BUFF	OFF
16	NTSC MATRIX	OFF
17	HDTV	OFF
18	FSBL	OFF
19	AUTO CUT OFF	ON
20	FSW 2 DIS	OFF
21	FSW 2	OFF
22	FSW 1	OFF
23	FSW 1	OFF
24	ADAPT BLACK	OFF
25	Y HIGH 1V	OFF
26	MOD2	OFF
27	BLUE STRETCH	OFF
28	VM OUT	OFF
29	PEAK DRV ABS	ON
30	TIME CNST PEAK LIMIT	OFF

DEFLECTION SYSTEM ADJUSTMENT

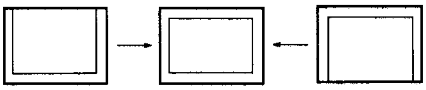
1. Enter into the service mode and select 'Deflect cont.'.The 'Deflect cont. SDA9361' adjustment menu will be displayed.
2. Select and adjust each item in order to get an optimum image.

Item No	Adjustment item	Data Amount
1	HDE	ON
2	VR	0
3	RABL	ON
4	BLK DIS	OFF
5	2FH 2*LINE FRQ	ON
6	STANDBY MODE	OFF
7	VERTICAL	ON
8	BSE BLK SELECT	OFF
9	SSE START SCAN	OFF
10	SRSE START RED SCAN	OFF
11	GBE GUARD BAND	OFF
12	STE SCAN TIME TABLE	OFF
13	NSA SELF ADAPTION	ON
14	V SHIFT	ADJ
15	V SIZE	ADJ
16	V LIN	ADJ
17	V S-COR	ADJ
18	V EHT COMP	25" = 78 29" = 100 28" = 36
19	H SIZE	ADJ
20	PIN PHASE	ADJ
21	PIN AMP	ADJ
22	UP COR PIN	ADJ
23	LOW COR PIN	ADJ
24	H EHT COMP	25" = 78 29" = 100 28" = 36
25	H SHIFT	ADJ
26	V ANGLE	ADJ
27	V BOW	ADJ
28	PWM START	0

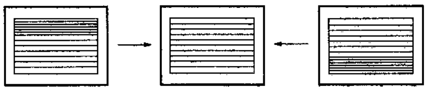
V SIZE



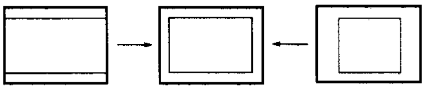
V POS



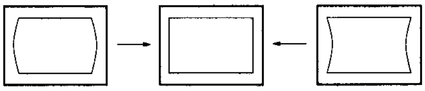
V LIN



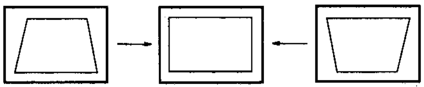
H SIZE



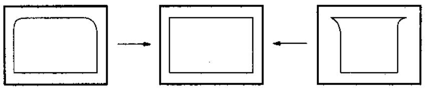
H PIN CUSH



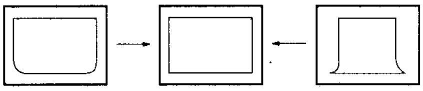
H TILT



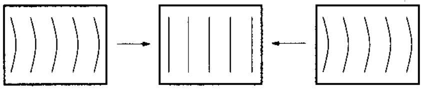
H UP COR



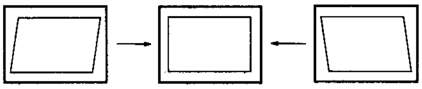
H LOWER COR



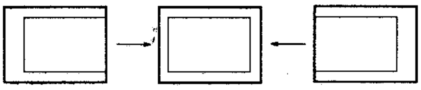
AFC V BOW



AFC V ANGLE



H POS



4-2. VOLUME ELECTRICAL ADJUSTMENTS

Sub Brightness Adjustment

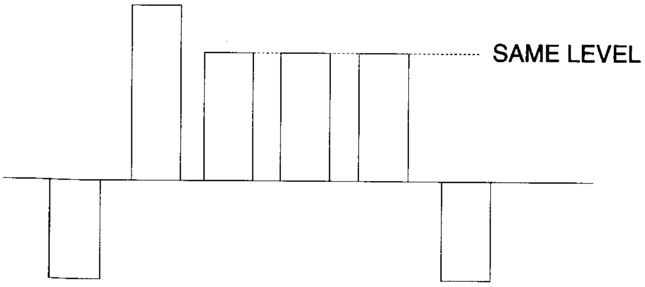
1. Enter Service Mode (Device Menu).
2. Select 'SUB ADJUST MENU'.

Sub adjustment
Sub Picture
Sub Color
Sub Brightness
4/3 Center
PAP H-Center
PAP HWE-Offset

3. Adjust the value according to the following advice.

Sub Color Adjustment

1. Input a PAL color bar signal.
2. Connect an oscilloscope to CN3703.
3. Enter into 'SERVICE MODE'.
4. Choose 'SUB ADJUST'.
5. Enter into Sub Color mode.
6. Adjust data so that the right sides of the waveforms are of equal height.



4-3. TEST MODE 2:

Is available by pressing the Test button twice, OSD "TT" appears. The functions described below are available by pressing the two numbers. To release Test Mode 2, press 0, 10, 20 ... twice or switch the TV into Standby Mode. Pressing the two Local Control buttons (+ and –) during Power ON will also switch into "TT" mode.

In TT mode, it is possible to remove the Menu from the screen by pressing the Speaker Off button once. Pressing the Speaker OFF button a second time will cause the menu to reappear . The Function is kept even when the menu is not displayed!!

00	Switch back to normal mode - TT mode off
01	Switch service menu on
02	Direct access to Noise reduction
03	Set volume to 30%
04	Service menu in "Service Mode"
05	Service menu in "Production Mode"
06	Set Volume to 80%
07	Aging Mode
08	Shipping Condition
09	Language Reset
10	The TT number will be deleted
11	Direct access to Balance
12	Direct access to Hue
13	Display of TV set configuration
14	Production Info Display
15	Read Analog from ROM
16	Save Analog F in NVM
17	This function presets the Labels for the AV sources: AV1, RGB, AV2, YC2, AV3, YC3, AV4, YC4.
18	No function
19	No function
20	See TT10
21	Picture Rotation automatic function: (-4) -> (+4) -> 0
22	Error Monitor Display
23	Direct access to Sub Brightness Adjustment.
24	Direct access to Sub Colour.
25	Status Menu Display
26	Text Character selection (Char set 06 -> West Europe)
27	Text Character selection (Char set 38 -> East Europe)
28	Text Character selection (Char set 40 -> West Europe) US English
29	Text Character selection (Char set55 -> West Europe) Turkish
30	See TT10

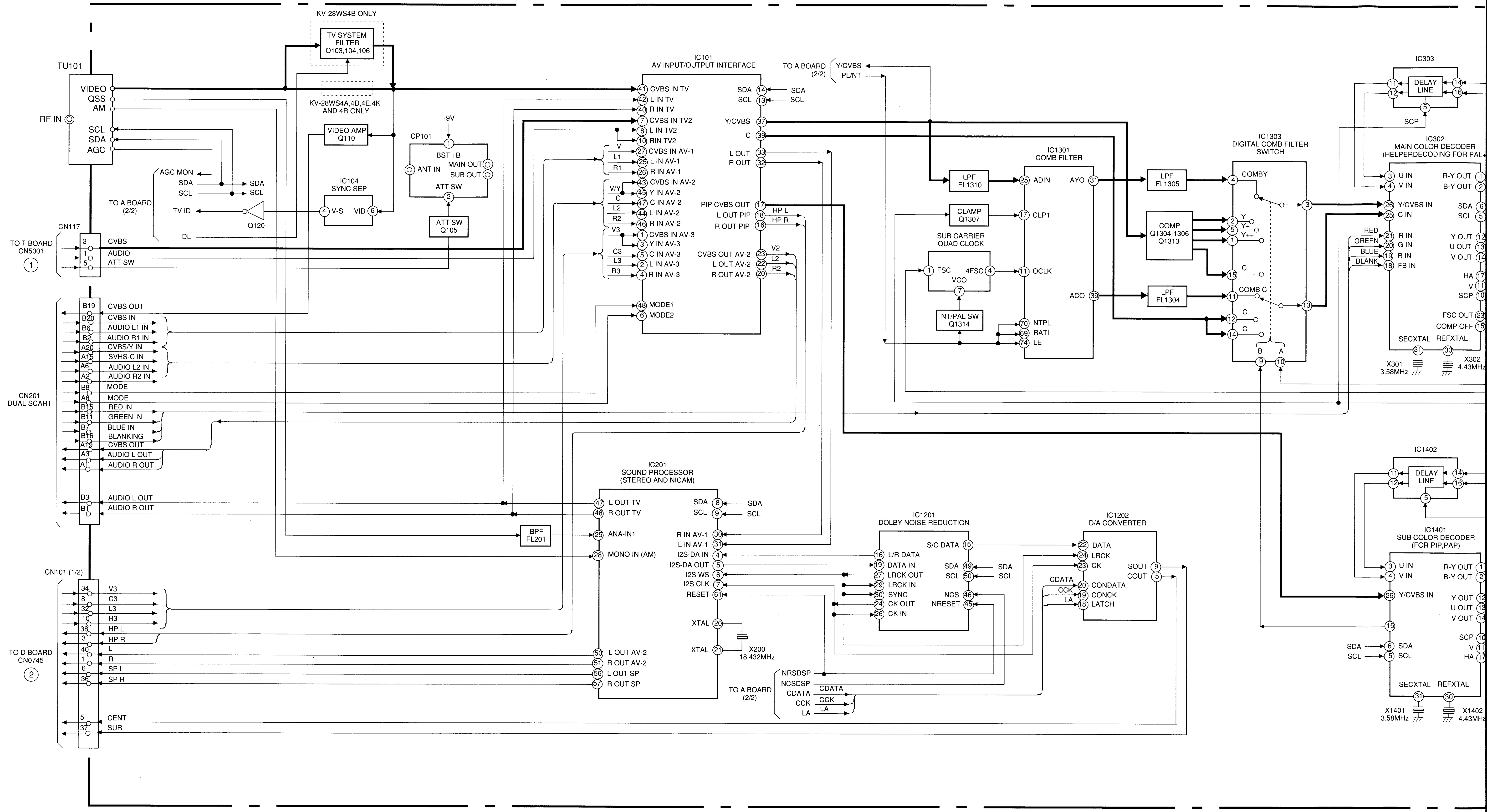
31	no function
32	no function
33	no function
34	no function
35	no function
36	no function
37	no function
38	Screen Position
39	Reset Programme Table
40	See TT10
41	Picture Min
42	no function
43	no function
44	no function
45	Set NVM to Protect mode
46	IR Channel Pressetting Mode. The channel pressetting can be done by a Special transmitter. Sequence: TT46 -> --PR Number select display appears Select Prog. No. from where the channel shall be stored. --> Now TV is waiting for IR sequence <-- --> If no IR transmission starts TT46 is released after 20 secs <--! Note: when TT46 is active, any transmission will be interpreted as PROG data !
47	no function
48	no function
49	New Initialize
50	See TT10
51	Strobo mode is activated.
52	no function
53	no function
54	Direct access to Velocity Modulation VM (Production use)
55	Slicer High
56	Slicer No
57	Megatext Service Menu on
58	MTX Small Framing Code Window

59	MTX Wide Framing Code Window
60	See TT10
61	no function
62	no function
63	no function
64	Reset all IIC Slave commands (Production use)
65	Reset stored error codes in NVM
66	Feature box and Pal Plus
67	no function
68	Ignore Errors - on
69	Ignore errors - off
70	See TT10
71	no function
72	no function
73	Megatext RGB textlevel one step decreased.
74	Megatext RGB textlevel one step decreased (max 1 steps down starting from E0h) (Production use)
75	no function
76	CDA9360
77	SDA9280
78	PIP
79	no function
80	See TT10
81	S87C654 Default data setting
82	TDA9170 Default data setting
83	SAA 7185WP Default data setting
84	TDA4780 Default data setting
85	TDA9144 Default data setting
86	TDA9143 Default data setting
87	SDA9288 Default data setting
88	Char set Russian
89	Char set Russian (esc)
90	See TT10

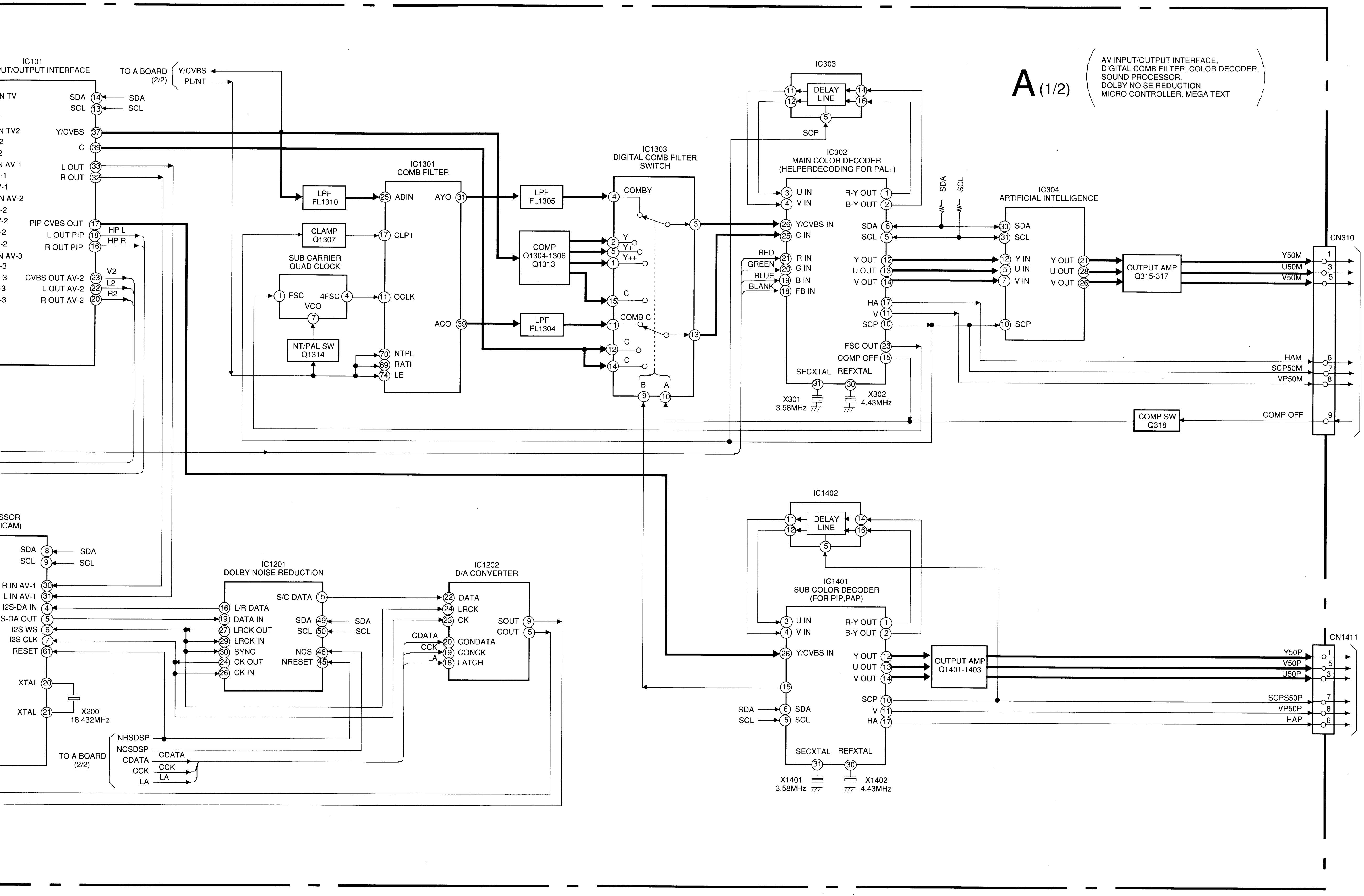
SECTION 5

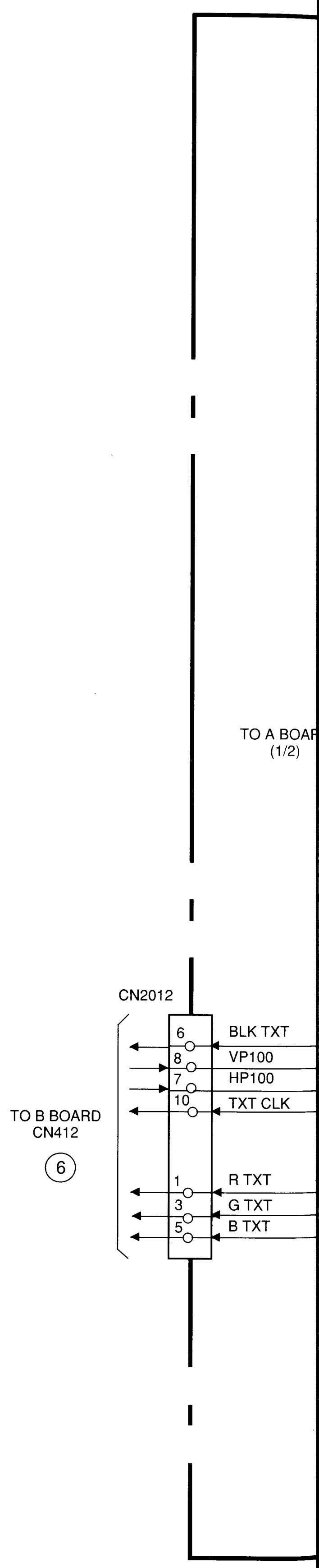
DIAGRAMS

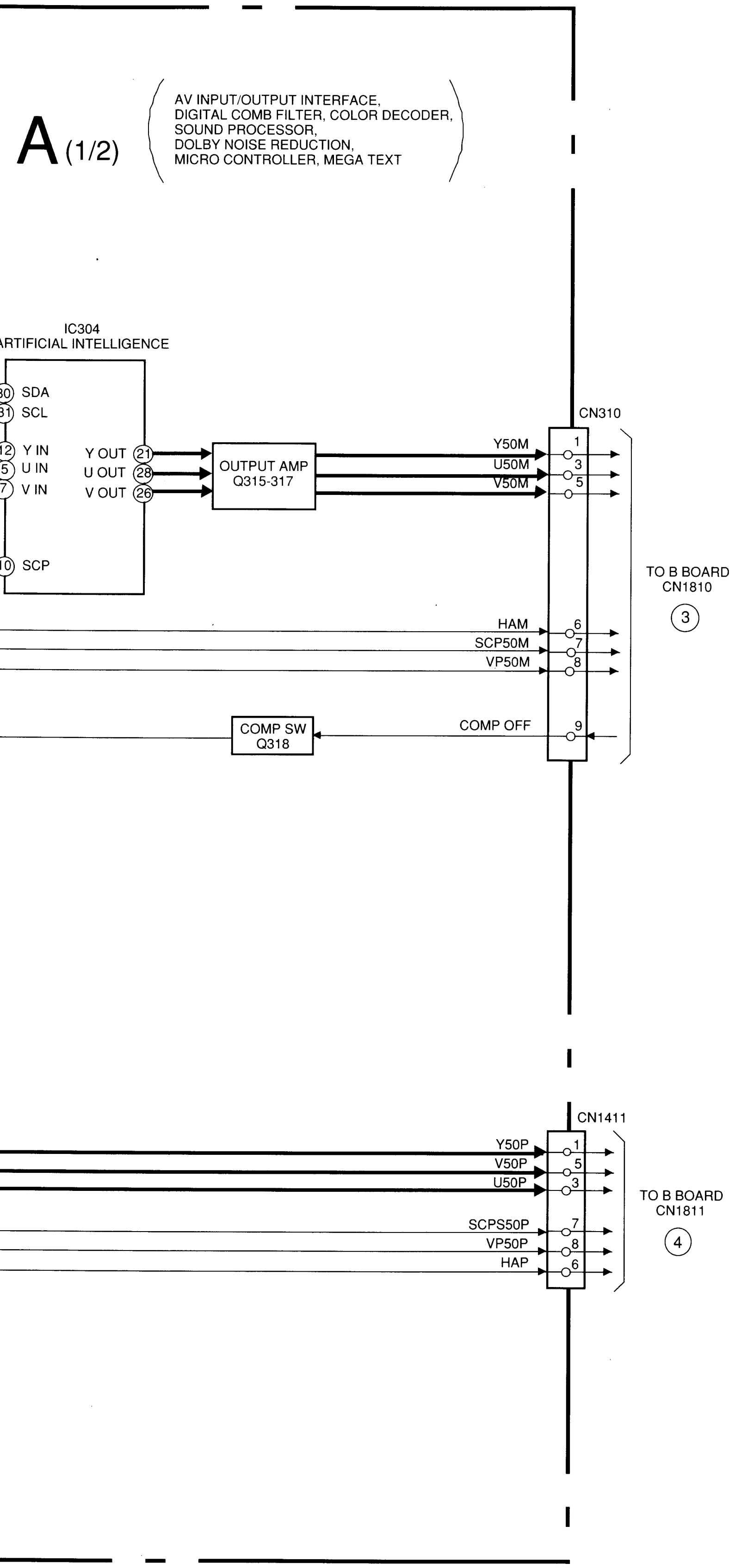
BLOCK DIAGRAM (1)


I
TU101
VIDEO
QSS
AM
RF IN
SCL
SDA
AGC
KV-28WS4B ONLY
TV SYSTEM FILTER Q103,104,106
KV-28WS4A,4D,4E,4K AND 4R ONLY
VIDEO AMP Q110
AGC MON
SDA
SCL
TO A BOARD (2/2)
TV ID
DL
Q120
IC104 SYNC SEP
V-S
VID
+9V
CP101
BST +B
ANT IN
MAIN OUT
SUB OUT
ATT SW
ATT SW Q105
CN117
TO T BOARD CN5001
1
CVBS
AUDIO
ATT SW
CN201 DUAL SCART
CVBS OUT
CVBS IN
AUDIO L1 IN
AUDIO R1 IN
CVBS/Y IN
SVHS-C IN
AUDIO L2 IN
AUDIO R2 IN
MODE
MODE
RED IN
GREEN IN
BLUE IN
BLANKING
CVBS OUT
AUDIO L OUT
AUDIO R OUT
AUDIO L OUT
AUDIO R OUT
CN101 (1/2)
TO D BOARD CN0745
2
V3
C3
L3
R3
HP L
HP R
L
R
SP L
SP R
CENT
SUR
IC101 AV INPUT/OUTPUT INTERFACE
CVBS IN TV
L IN TV
R IN TV
CVBS IN TV2
L IN TV2
RIN TV2
CVBS IN AV-1
L IN AV-1
R IN AV-1
CVBS IN AV-2
Y IN AV-2
C IN AV-2
L IN AV-2
R IN AV-2
CVBS IN AV-3
Y IN AV-3
C IN AV-3
L IN AV-3
R IN AV-3
MODE1
MODE2
SDA
SCL
Y/CVBS
C
L OUT
R OUT
PIP CVBS OUT
L OUT PIP
R OUT PIP
CVBS OUT AV-2
L OUT AV-2
R OUT AV-2
HP L
HP R
V2
L2
R2
TO A BOARD (2/2)
Y/CVBS
PL/NT
IC201 SOUND PROCESSOR (STEREO AND NICAM)
L OUT TV
R OUT TV
ANA-IN1
MONO IN (AM)
L OUT AV-2
R OUT AV-2
L OUT SP
R OUT SP
SDA
SCL
R IN AV-1
L IN AV-1
I2S-DA IN
I2S-DA OUT
I2S WS
I2S CLK
RESET
XTAL
XTAL
X200 18.432MHz
BPF FL201
IC1201 DOLBY NOISE REDUCTION
S/C DATA
L/R DATA
DATA IN
LRCK OUT
LRCK IN
SYNC
CK OUT
CK IN
NCS
NRESET
IC1202 D/A CONVERTER
DATA
LRCK
CK
CONDATA
CONCK
LATCH
SOUT
COUT
CDATA
CCK
LA
TO A BOARD (2/2)
NRSDSP
NCSDSP
CDATA
CCK
LA
LPF FL1310
CLAMP Q1307
SUB CARRIER QUAD CLOCK
FSC
4FSC
VCO
NT/PAL SW Q1314
IC1301 COMB FILTER
ADIN
CLP1
OCLK
NTPL
RATI
LE
AYO
ACO
LPF FL1305
COMP Q1304-1306 Q1313
LPF FL1304
IC1303 DIGITAL COMB FILTER SWITCH
COMBY
Y
Y+
Y++
C
COMB C
C
C
B
A
IC303
DELAY LINE
SCP
IC302 MAIN COLOR DECODER (HELPERDECODING FOR PAL+
U IN
V IN
Y/CVBS IN
C IN
R IN
G IN
B IN
FB IN
RED
GREEN
BLUE
BLANK
R-Y OUT
B-Y OUT
SDA
SCL
Y OUT
U OUT
V OUT
HA
V
SCP
FSC OUT
COMP OFF
SECXTAL
REFXTAL
X301 3.58MHz
X302 4.43MHz
IC1402
DELAY LINE
IC1401 SUB COLOR DECODER (FOR PIP,PAP)
U IN
V IN
Y/CVBS IN
SDA
SCL
R-Y OUT
B-Y OUT
Y OUT
U OUT
V OUT
SCP
V
HA
SECXTAL
REFXTAL
X1401 3.58MHz
X1402 4.43MHz

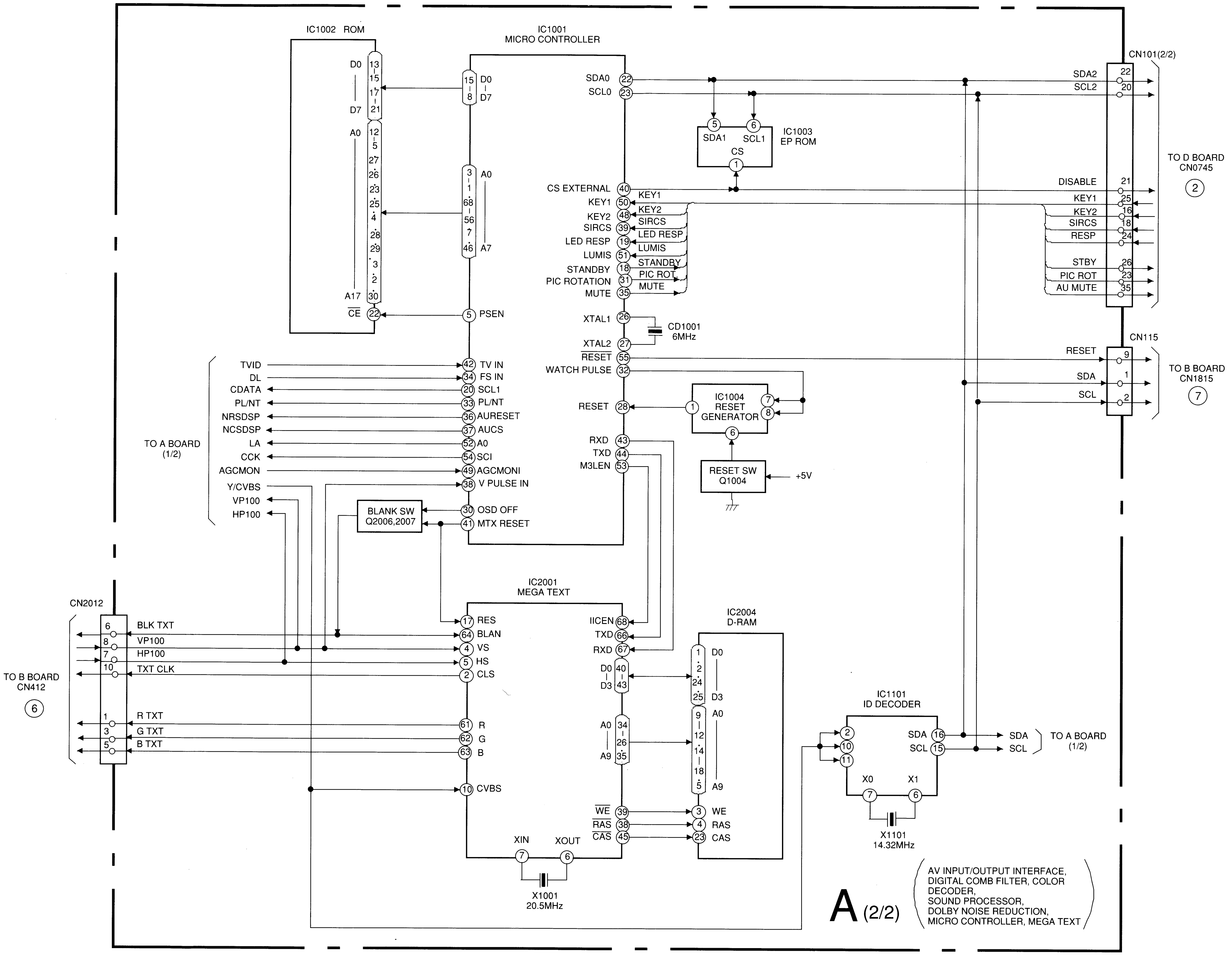
BLOCK DIA


A (1/2)
AV INPUT/OUTPUT INTERFACE,
DIGITAL COMB FILTER, COLOR DECODER,
SOUND PROCESSOR,
DOLBY NOISE REDUCTION,
MICRO CONTROLLER, MEGA TEXT
IC101
UT/OUTPUT INTERFACE
TO A BOARD (2/2)
Y/CVBS
PL/NT
SDA 14
SCL 13
Y/CVBS 37
C 39
L OUT 33
R OUT 32
PIP CVBS OUT 17
L OUT PIP 18
R OUT PIP 16
HP L
HP R
CVBS OUT AV-2 23
L OUT AV-2 22
R OUT AV-2 20
V2
L2
R2
IC1301
COMB FILTER
LPF FL1310
CLAMP Q1307
SUB CARRIER QUAD CLOCK
FSC
4FSC
VCO
NT/PAL SW Q1314
ADIN 25
CLP1 17
OCLK 11
NTPL 70
RATI 69
LE 74
AYO 31
ACO 39
LPF FL1305
COMP Q1304-1306 Q1313
LPF FL1304
IC1303
DIGITAL COMB FILTER SWITCH
COMBY
Y
Y+
Y++
C
COMB C
B
A
IC303
DELAY LINE
SCP
IC302
MAIN COLOR DECODER
(HELPERDECODING FOR PAL+)
U IN
V IN
Y/CVBS IN
C IN
RED
GREEN
BLUE
BLANK
R IN
G IN
B IN
FB IN
R-Y OUT
B-Y OUT
SDA
SCL
Y OUT
U OUT
V OUT
HA
V
SCP
FSC OUT
COMP OFF
SECXTAL
REFXTAL
X301 3.58MHz
X302 4.43MHz
IC304
ARTIFICIAL INTELLIGENCE
SDA
SCL
Y IN
U IN
V IN
SCP
Y OUT
U OUT
V OUT
OUTPUT AMP Q315-317
COMP SW Q318
CN310
Y50M
U50M
V50M
HAM
SCP50M
VP50M
COMP OFF
TO B BOARD CN1810
③
SSOR
ICAM)
SDA 8
SCL 9
R IN AV-1 30
L IN AV-1 31
I2S-DA IN 4
S-DA OUT 5
I2S WS 6
I2S CLK 7
RESET 61
XTAL 20
XTAL 21
X200 18.432MHz
IC1201
DOLBY NOISE REDUCTION
L/R DATA
DATA IN
LRCK OUT
LRCK IN
SYNC
CK OUT
CK IN
S/C DATA
SDA
SCL
NCS
NRESET
IC1202
D/A CONVERTER
DATA
LRCK
CK
CONDATA
CONCK
LATCH
SOUT
COUT
CDATA
CCK
LA
TO A BOARD (2/2)
NRSDSP
NCSDSP
CDATA
CCK
LA
IC1402
DELAY LINE
IC1401
SUB COLOR DECODER
(FOR PIP,PAP)
U IN
V IN
Y/CVBS IN
R-Y OUT
B-Y OUT
Y OUT
U OUT
V OUT
SCP
V
HA
SDA
SCL
SECXTAL
REFXTAL
X1401 3.58MHz
X1402 4.43MHz
OUTPUT AMP Q1401-1403
CN1411
Y50P
V50P
U50P
SCPS50P
VP50P
HAP
TO B BOARD CN1811
④

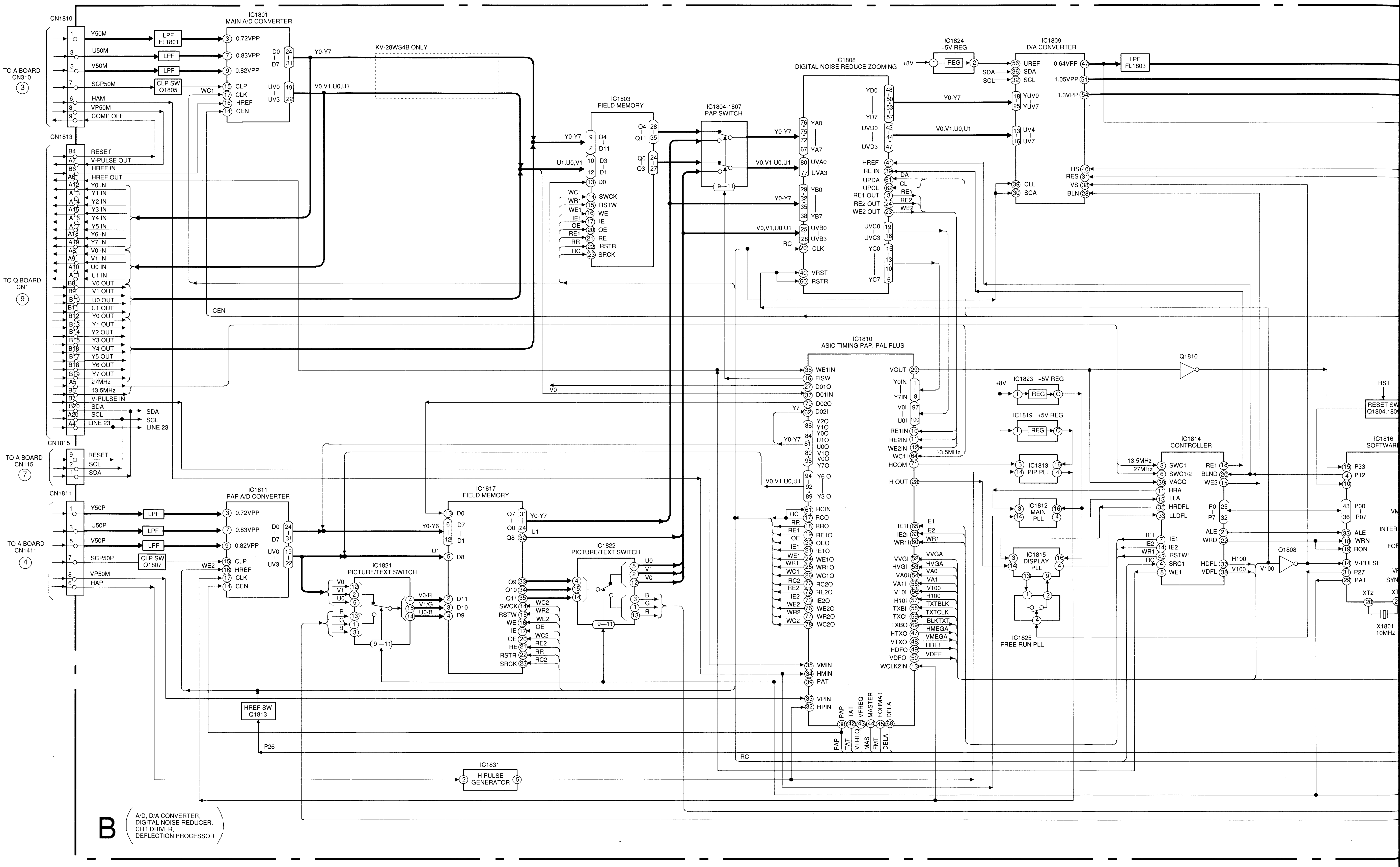

TO A BOAR (1/2)
CN2012
TO B BOARD CN412
⑥
BLK TXT
VP100
HP100
TXT CLK
R TXT
G TXT
B TXT

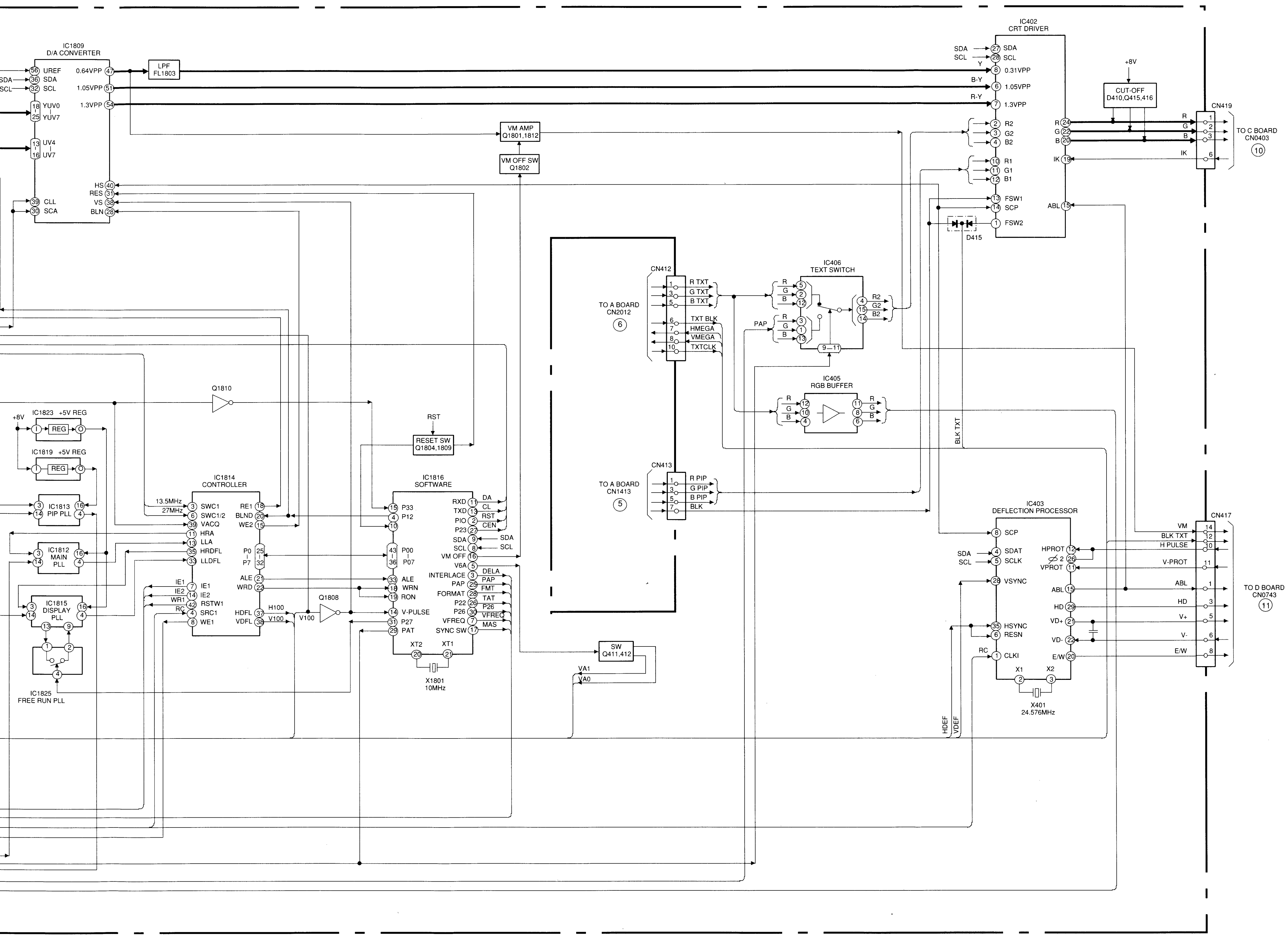

A (1/2)
AV INPUT/OUTPUT INTERFACE,
DIGITAL COMB FILTER, COLOR DECODER,
SOUND PROCESSOR,
DOLBY NOISE REDUCTION,
MICRO CONTROLLER, MEGA TEXT
IC304
ARTIFICIAL INTELLIGENCE
SDA
SCL
Y IN
U IN
V IN
SCP
Y OUT 21
U OUT 28
V OUT 26
OUTPUT AMP
Q315-317
Y50M
U50M
V50M
HAM
SCP50M
VP50M
COMP SW
Q318
COMP OFF
CN310
TO B BOARD
CN1810
3
CN1411
Y50P
V50P
U50P
SCPS50P
VP50P
HAP
TO B BOARD
CN1811
4

BLOCK DIAGRAM (2)

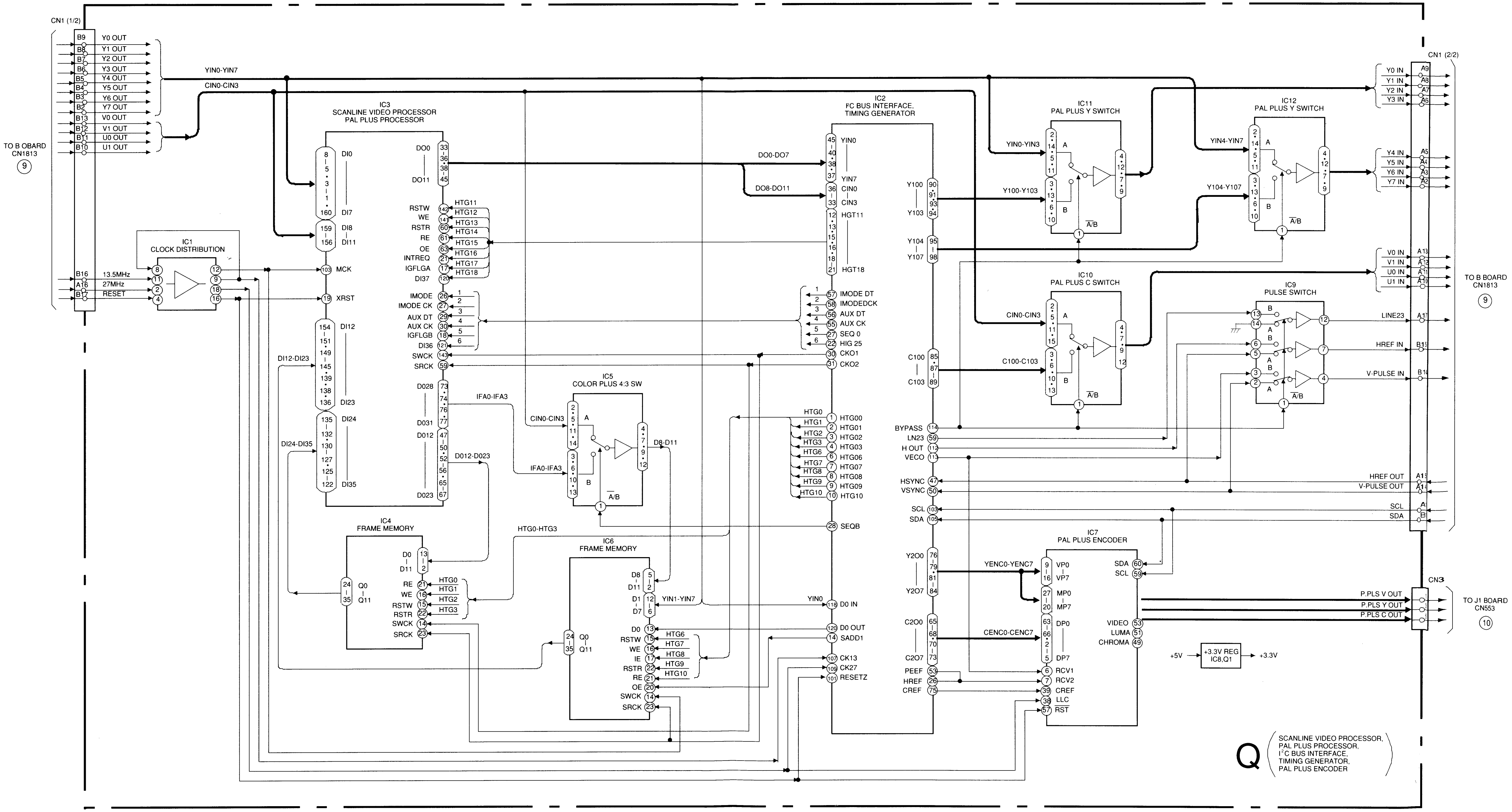

IC1002 ROM
D0
D7
A0
A17
CE
IC1001
MICRO CONTROLLER
D0
D7
A0
A7
PSEN
SDA0 22
SCL0 23
IC1003
EP ROM
SDA1
SCL1
CS
CS EXTERNAL 40
KEY1 50
KEY2 48
SIRCS 39
LED RESP 19
LUMIS 51
STANDBY 18
PIC ROTATION 31
MUTE 35
KEY1
KEY2
SIRCS
LED RESP
LUMIS
STANDBY
PIC ROT
MUTE
XTAL1 26
XTAL2 27
CD1001
6MHz
RESET 55
WATCH PULSE 32
RESET 28
IC1004
RESET
GENERATOR
RESET SW
Q1004
+5V
RXD 43
TXD 44
M3LEN 53
TV IN
FS IN
SCL1
PL/NT
AURESET
AUCS
A0
SCI
AGCMONI
V PULSE IN
OSD OFF
MTX RESET
BLANK SW
Q2006,2007
TVID
DL
CDATA
PL/NT
NRSDSP
NCSDSP
LA
CCK
AGCMON
Y/CVBS
VP100
HP100
TO A BOARD
(1/2)
CN101(2/2)
SDA2
SCL2
DISABLE
KEY1
KEY2
SIRCS
RESP
STBY
PIC ROT
AU MUTE
TO D BOARD
CN0745
2
CN115
RESET
SDA
SCL
TO B BOARD
CN1815
7
CN2012
BLK TXT
VP100
HP100
TXT CLK
R TXT
G TXT
B TXT
TO B BOARD
CN412
6
IC2001
MEGA TEXT
RES
BLAN
VS
HS
CLS
R
G
B
CVBS
IICEN 68
TXD 66
RXD 67
D0
D3
A0
A9
WE 39
RAS 38
CAS 45
XIN
XOUT
X1001
20.5MHz
IC2004
D-RAM
D0
D3
A0
A9
WE
RAS
CAS
IC1101
ID DECODER
SDA 16
SCL 15
X0
X1
X1101
14.32MHz
SDA
SCL
TO A BOARD
(1/2)
A (2/2)
AV INPUT/OUTPUT INTERFACE,
DIGITAL COMB FILTER, COLOR
DECODER,
SOUND PROCESSOR,
DOLBY NOISE REDUCTION,
MICRO CONTROLLER, MEGA TEXT

BLOCK DIAGRAM (3)

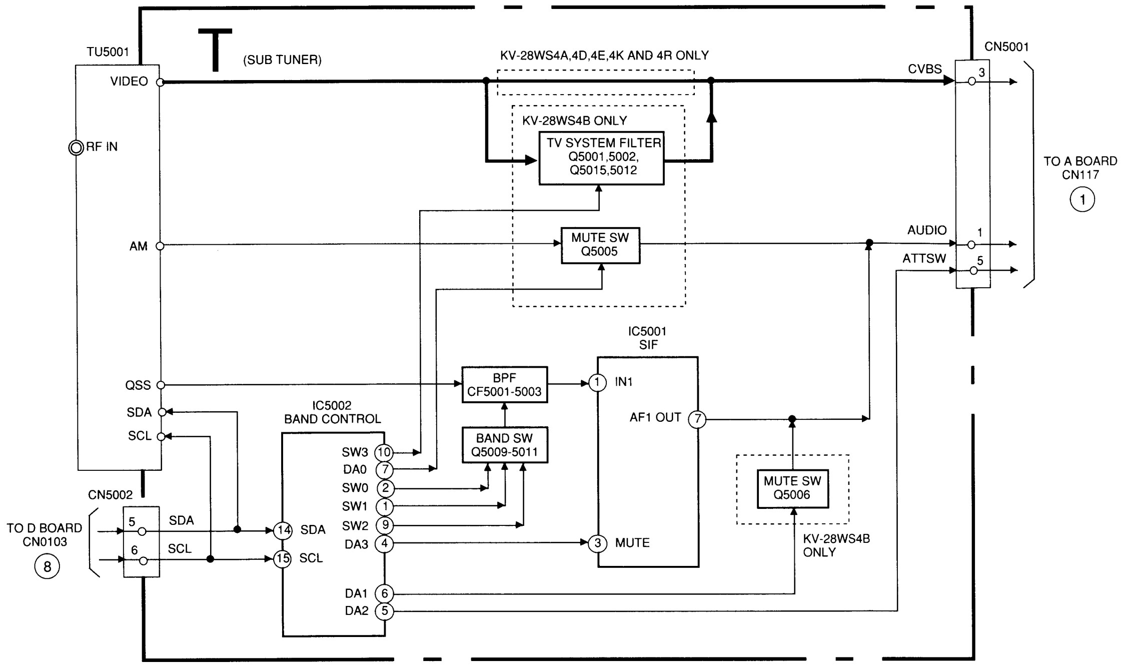

CN1810
TO A BOARD CN310 ③
IC1801 MAIN A/D CONVERTER
LPF FL1801
CLP SW Q1805
KV-28WS4B ONLY
IC1803 FIELD MEMORY
IC1804-1807 PAP SWITCH
IC1808 DIGITAL NOISE REDUCE ZOOMING
IC1824 +5V REG
IC1809 D/A CONVERTER
LPF FL1803
CN1813
TO Q BOARD CN1 ⑨
CN1815
TO A BOARD CN115 ⑦
CN1811
TO A BOARD CN1411 ④
IC1811 PAP A/D CONVERTER
CLP SW Q1807
IC1821 PICTURE/TEXT SWITCH
IC1817 FIELD MEMORY
IC1822 PICTURE/TEXT SWITCH
IC1810 ASIC TIMING PAP, PAL PLUS
IC1823 +5V REG
IC1819 +5V REG
IC1813 PIP PLL
IC1812 MAIN PLL
IC1815 DISPLAY PLL
IC1825 FREE RUN PLL
Q1810
IC1814 CONTROLLER
Q1808
RESET SW Q1804,1809
IC1816 SOFTWARE
X1801 10MHz
HREF SW Q1813
IC1831 H PULSE GENERATOR
B
A/D, D/A CONVERTER, DIGITAL NOISE REDUCER, CRT DRIVER, DEFLECTION PROCESSOR

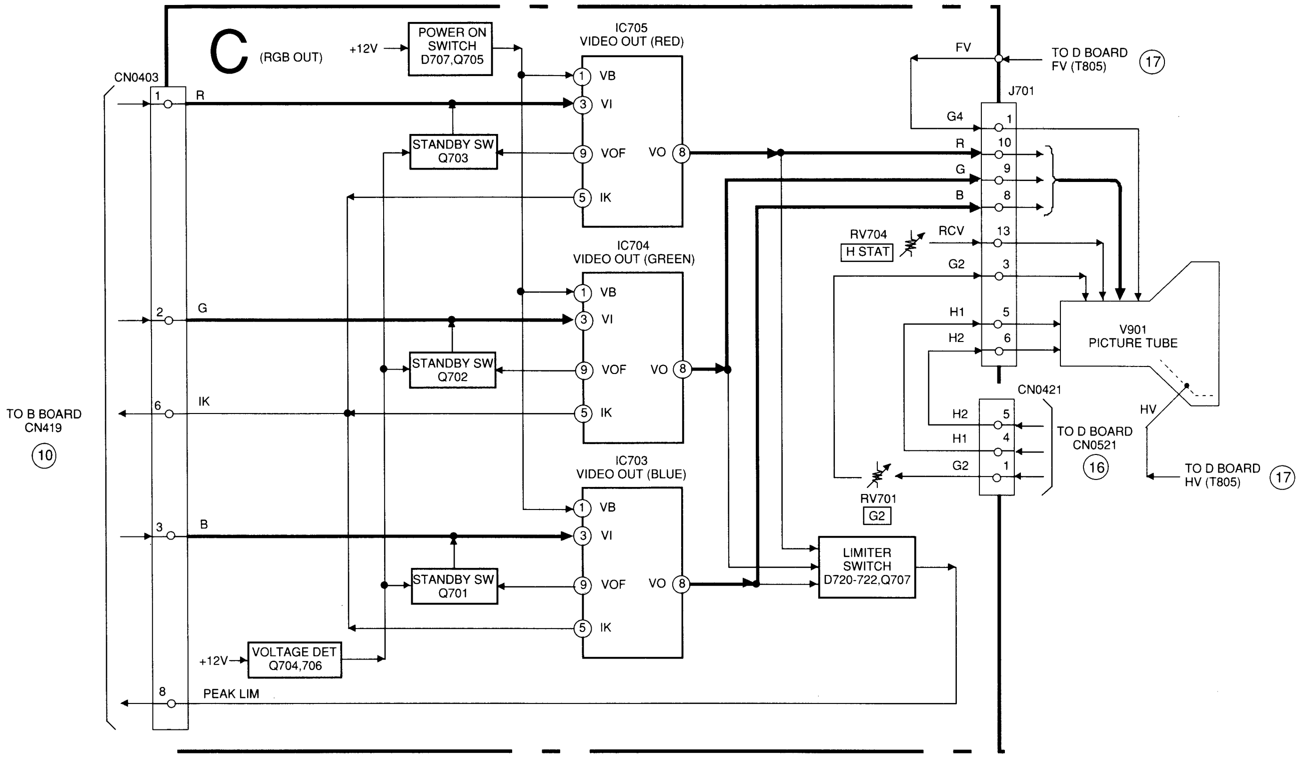

IC1809
D/A CONVERTER
UREF
SDA
SCL
YUV0
YUV7
UV4
UV7
0.64VPP
1.05VPP
1.3VPP
HS
RES
VS
BLN
CLL
SCA
LPF
FL1803
VM AMP
Q1801,1812
VM OFF SW
Q1802
IC402
CRT DRIVER
SDA
SCL
Y
B-Y
R-Y
0.31VPP
1.05VPP
1.3VPP
R2
G2
B2
R1
G1
B1
FSW1
SCP
FSW2
D415
ABL
IK
+8V
CUT-OFF
D410,Q415,416
CN419
TO C BOARD
CN0403
⑩
CN412
TO A BOARD
CN2012
⑥
R TXT
G TXT
B TXT
TXT BLK
HMEGA
VMEGA
TXTCLK
IC406
TEXT SWITCH
PAP
IC405
RGB BUFFER
BLK TXT
CN413
TO A BOARD
CN1413
⑤
R PIP
G PIP
B PIP
BLK
Q1810
IC1823 +5V REG
IC1819 +5V REG
REG
IC1813
PIP PLL
IC1812
MAIN
PLL
IC1815
DISPLAY
PLL
IC1825
FREE RUN PLL
IC1814
CONTROLLER
13.5MHz
27MHz
SWC1
SWC1/2
VACQ
HRA
LLA
HRDFL
LLDFL
IE1
IE2
RSTW1
SRC1
WE1
RE1
BLND
WE2
P0
P7
ALE
WRD
HDFL
VDFL
H100
V100
Q1808
RST
RESET SW
Q1804,1809
IC1816
SOFTWARE
P33
P12
P00
P07
WRN
RON
V-PULSE
P27
PAT
RXD
TXD
PIO
P23
SDA
SCL
VM OFF
V6A
INTERLACE
PAP
FORMAT
P22
P26
VFREQ
SYNC SW
DA
CL
RST
CEN
DELA
FMT
TAT
VFREC
MAS
XT2
XT1
X1801
10MHz
SW
Q411,412
VA1
VA0
IC403
DEFLECTION PROCESSOR
SCP
SDAT
SCLK
VSYNC
HSYNC
RESN
CLKI
RC
HPROT
VPROT
ABL
HD
VD+
VD-
E/W
X1
X2
X401
24.576MHz
HDEF
VDEF
CN417
VM
BLK TXT
H PULSE
V-PROT
V+
V-
TO D BOARD
CN0743
⑪

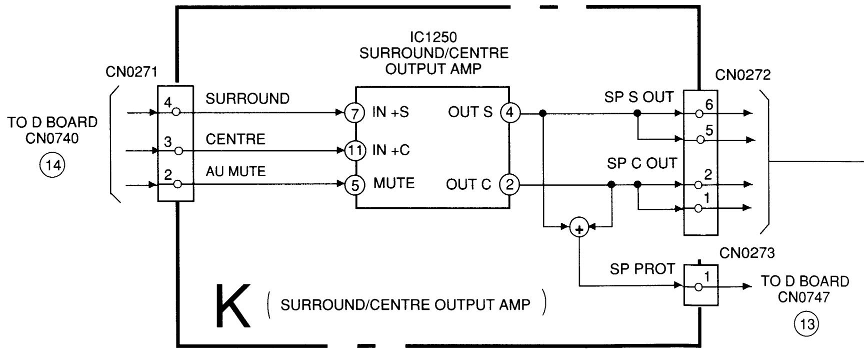
BLOCK DIAGRAM (4) (KV-28WS4A,4D,4E,4K and 4R only)

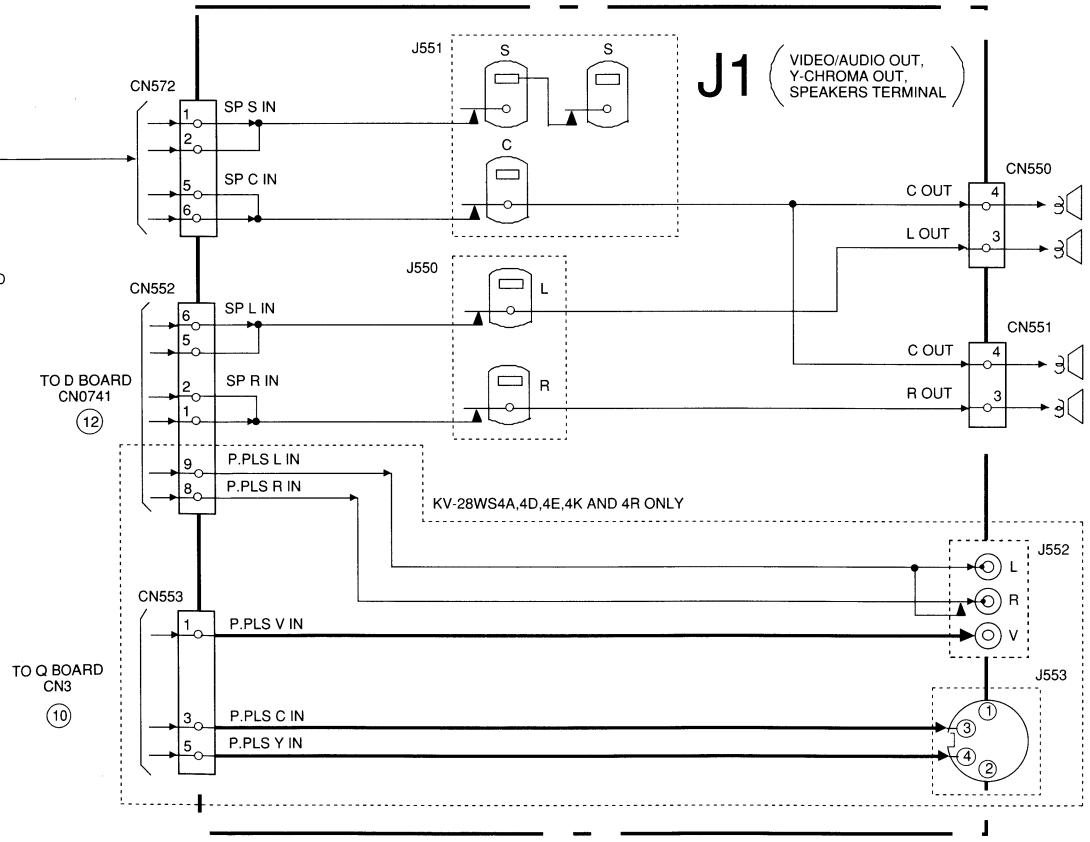

CN1 (1/2)
TO B OBARD CN1813
⑨
B9 Y0 OUT
B8 Y1 OUT
B7 Y2 OUT
B6 Y3 OUT
B5 Y4 OUT
B4 Y5 OUT
B3 Y6 OUT
B2 Y7 OUT
B13 V0 OUT
B12 V1 OUT
B11 U0 OUT
B10 U1 OUT
B16 13.5MHz
A16 27MHz
B17 RESET
YIN0-YIN7
CIN0-CIN3
IC1
CLOCK DISTRIBUTION
IC3
SCANLINE VIDEO PROCESSOR
PAL PLUS PROCESSOR
DI0
DI7
DI8
DI11
MCK
XRST
DI12
DI23
DI24
DI35
DI12-DI23
DI24-DI35
DO0
DO11
RSTW
WE
RSTR
RE
OE
INTREQ
IGFLGA
DI37
IMODE
IMODE CK
AUX DT
AUX CK
IGFLGB
DI36
SWCK
SRCK
DO28
DO31
DO12
DO23
HTG11
HTG12
HTG13
HTG14
HTG15
HTG16
HTG17
HTG18
IFA0-IFA3
DO12-DO23
IC4
FRAME MEMORY
D0
D11
Q0
Q11
HTG0
HTG1
HTG2
HTG3
IC5
COLOR PLUS 4:3 SW
CIN0-CIN3
IFA0-IFA3
D8-D11
A
B
A/B
HTG0-HTG3
IC6
FRAME MEMORY
D8
D11
D1
D7
YIN1-YIN7
HTG6
HTG7
HTG8
HTG9
HTG10
IE
IC2
I²C BUS INTERFACE,
TIMING GENERATOR
DO0-DO7
DO8-DO11
YIN0
YIN7
CIN0
CIN3
HGT11
HGT18
IMODE DT
IMODEDCK
AUX DT
AUX CK
SEQ 0
HIG 25
CKO1
CKO2
HTG00
HTG01
HTG02
HTG03
HTG06
HTG07
HTG08
HTG09
HTG10
SEQB
DO IN
DO OUT
SADD1
CK13
CK27
RESETZ
Y100
Y103
Y104
Y107
C100
C103
BYPASS
LN23
H OUT
VECO
HSYNC
VSYNC
SCL
SDA
Y200
Y207
C200
C207
PEEF
HREF
CREF
IC11
PAL PLUS Y SWITCH
YIN0-YIN3
Y100-Y103
IC12
PAL PLUS Y SWITCH
YIN4-YIN7
Y104-Y107
IC10
PAL PLUS C SWITCH
CIN0-CIN3
C100-C103
IC9
PULSE SWITCH
IC7
PAL PLUS ENCODER
YENC0-YENC7
CENC0-CENC7
VP0
VP7
MP0
MP7
DP0
DP7
RCV1
RCV2
CREF
LLC
RST
VIDEO
LUMA
CHROMA
+5V
+3.3V REG
IC8,Q1
+3.3V
CN1 (2/2)
Y0 IN A9
Y1 IN A8
Y2 IN A7
Y3 IN A6
Y4 IN A5
Y5 IN A4
Y6 IN A3
Y7 IN A2
V0 IN
V1 IN
U0 IN
U1 IN
LINE23
HREF IN
V-PULSE IN
HREF OUT
V-PULSE OUT
SCL
SDA
TO B BOARD CN1813
⑨
CN3
P.PLS V OUT
P.PLS Y OUT
P.PLS C OUT
TO J1 BOARD CN553
⑩
Q
SCANLINE VIDEO PROCESSOR,
PAL PLUS PROCESSOR,
I²C BUS INTERFACE,
TIMING GENERATOR,
PAL PLUS ENCODER

BLOCK DIAGRAM (5)

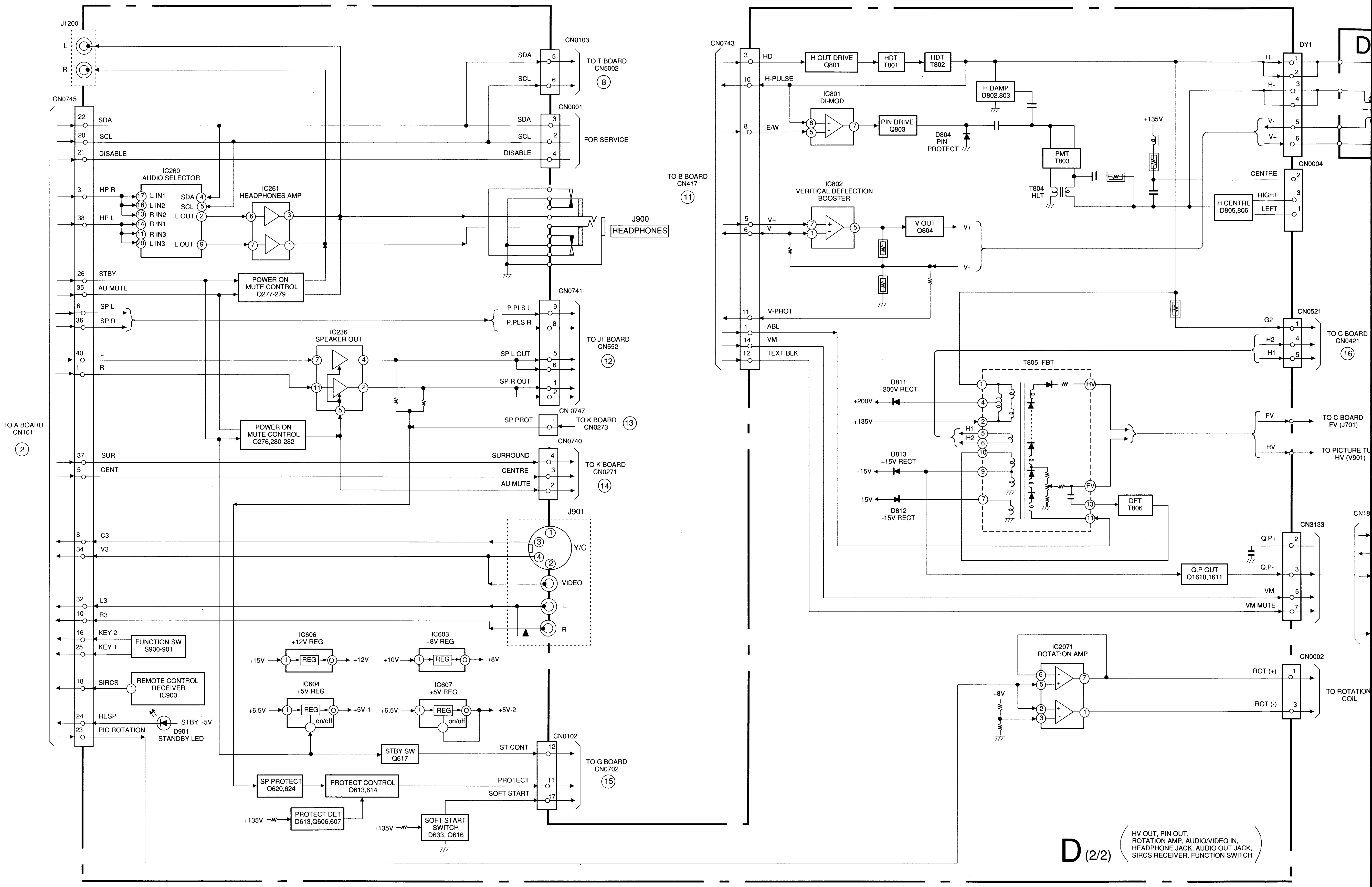

T
(SUB TUNER)
TU5001
VIDEO
RF IN
AM
QSS
SDA
SCL
KV-28WS4A,4D,4E,4K AND 4R ONLY
KV-28WS4B ONLY
TV SYSTEM FILTER
Q5001,5002,
Q5015,5012
MUTE SW
Q5005
CVBS
AUDIO
ATTSW
CN5001
TO A BOARD
CN117
①
IC5001
SIF
BPF
CF5001-5003
IN1
AF1 OUT
BAND SW
Q5009-5011
MUTE
MUTE SW
Q5006
KV-28WS4B
ONLY
IC5002
BAND CONTROL
SW3
DA0
SW0
SW1
SW2
DA3
DA1
DA2
SDA
SCL
CN5002
TO D BOARD
CN0103
⑧

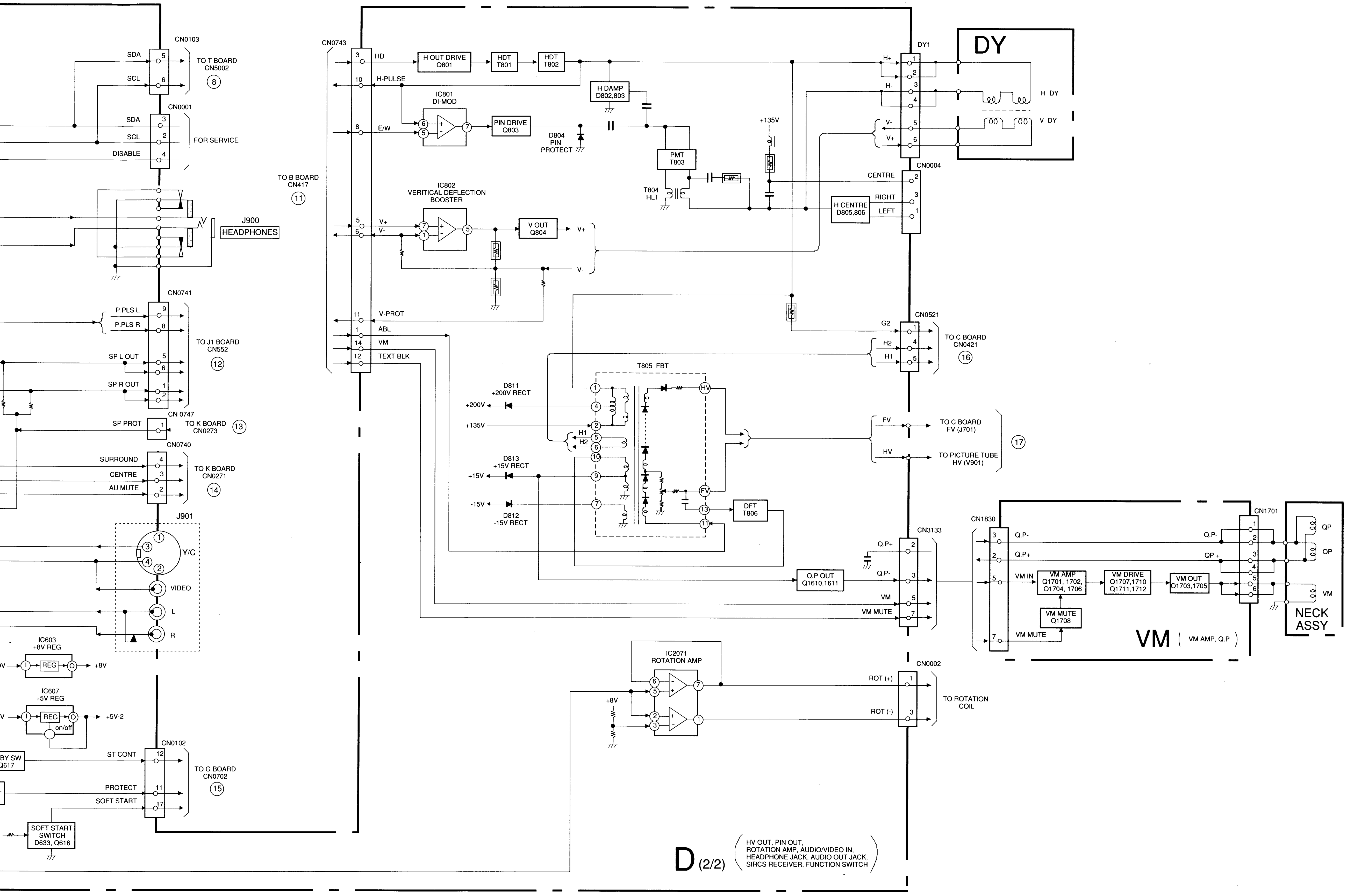

C
(RGB OUT)
CN0403
R
G
IK
B
PEAK LIM
+12V
POWER ON
SWITCH
D707,Q705
IC705
VIDEO OUT (RED)
VB
VI
VOF
VO
IK
STANDBY SW
Q703
IC704
VIDEO OUT (GREEN)
STANDBY SW
Q702
IC703
VIDEO OUT (BLUE)
STANDBY SW
Q701
VOLTAGE DET
Q704,706
TO B BOARD
CN419
⑩
FV
TO D BOARD
FV (T805)
⑰
J701
G4
R
G
B
RCV
G2
H1
H2
RV704
H STAT
V901
PICTURE TUBE
CN0421
TO D BOARD
CN0521
⑯
HV
TO D BOARD
HV (T805)
⑰
RV701
G2
LIMITER
SWITCH
D720-722,Q707


IC1250
SURROUND/CENTRE
OUTPUT AMP
CN0271
TO D BOARD
CN0740
⑭
SURROUND
CENTRE
AU MUTE
IN +S
IN +C
MUTE
OUT S
OUT C
SP S OUT
SP C OUT
CN0272
SP PROT
CN0273
TO D BOARD
CN0747
⑬
K
(SURROUND/CENTRE OUTPUT AMP)

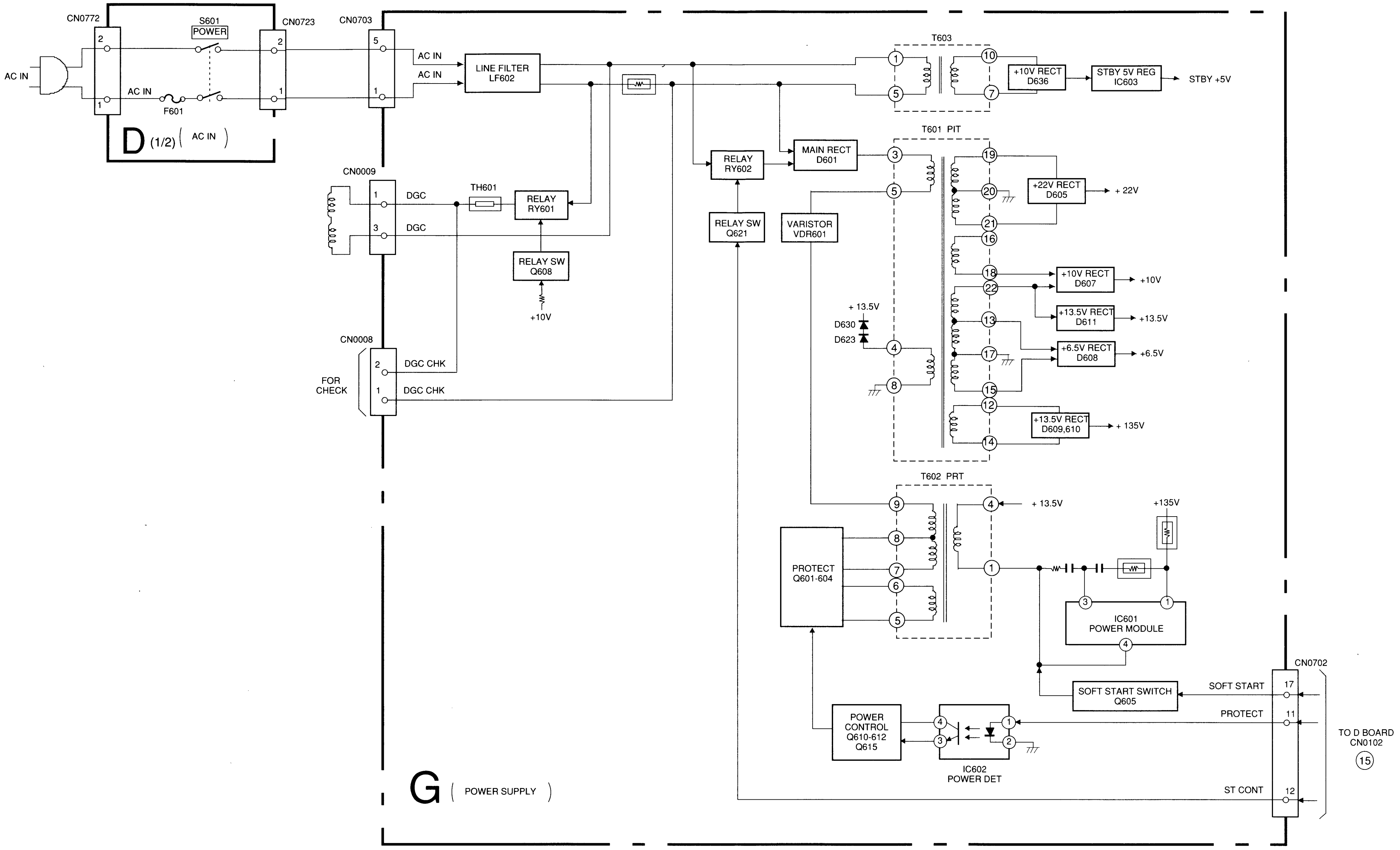

J1
(VIDEO/AUDIO OUT,
Y-CHROMA OUT,
SPEAKERS TERMINAL)
CN572
SP S IN
SP C IN
J551
S
S
C
CN552
SP L IN
SP R IN
J550
L
R
TO D BOARD
CN0741
⑫
P.PLS L IN
P.PLS R IN
KV-28WS4A,4D,4E,4K AND 4R ONLY
CN550
C OUT
L OUT
CN551
C OUT
R OUT
J552
L
R
V
CN553
P.PLS V IN
P.PLS C IN
P.PLS Y IN
TO Q BOARD
CN3
⑩
J553

BLOCK DIAGRAM (6)

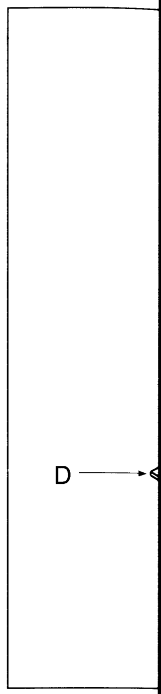

J1200
L
R
CN0745
22 SDA
20 SCL
21 DISABLE
3 HP R
38 HP L
26 STBY
35 AU MUTE
6 SP L
36 SP R
40 L
1 R
37 SUR
5 CENT
8 C3
34 V3
32 L3
10 R3
16 KEY 2
25 KEY 1
18 SIRCS
24 RESP
23 PIC ROTATION
TO A BOARD CN101 ②
IC260 AUDIO SELECTOR
L IN1 L IN2 R IN2 R IN1 L IN3 L IN3
SDA SCL L OUT L OUT
IC261 HEADPHONES AMP
POWER ON MUTE CONTROL Q277-279
IC236 SPEAKER OUT
POWER ON MUTE CONTROL Q276,280-282
FUNCTION SW S900-901
REMOTE CONTROL RECEIVER IC900
STBY +5V
D901 STANDBY LED
CN0103
SDA SCL
TO T BOARD CN5002 ⑧
CN0001
SDA SCL DISABLE
FOR SERVICE
J900 HEADPHONES
CN0741
P.PLS L P.PLS R
SP L OUT SP R OUT
TO J1 BOARD CN552 ⑫
CN 0747
SP PROT
TO K BOARD CN0273 ⑬
CN0740
SURROUND CENTRE AU MUTE
TO K BOARD CN0271 ⑭
J901
Y/C
VIDEO
L
R
IC606 +12V REG
+15V REG +12V
IC603 +8V REG
+10V REG +8V
IC604 +5V REG
+6.5V REG on/off +5V-1
IC607 +5V REG
+6.5V REG on/off +5V-2
STBY SW Q617
ST CONT
SP PROTECT Q620,624
PROTECT CONTROL Q613,614
PROTECT
SOFT START
PROTECT DET D613,Q606,607
+135V
SOFT START SWITCH D633, Q616
+135V
CN0102
TO G BOARD CN0702 ⑮
CN0743
3 HD
10 H-PULSE
8 E/W
5 V+
6 V-
11 V-PROT
1 ABL
14 VM
12 TEXT BLK
TO B BOARD CN417 ⑪
H OUT DRIVE Q801
HDT T801
HDT T802
H DAMP D802,803
IC801 DI-MOD
PIN DRIVE Q803
D804 PIN PROTECT
PMT T803
T804 HLT
+135V
IC802 VERITICAL DEFLECTION BOOSTER
V OUT Q804
V+
V-
DY1
H+ H- V- V+
D
CN0004
CENTRE RIGHT LEFT
H CENTRE D805,806
CN0521
G2 H2 H1
TO C BOARD CN0421 ⑯
T805 FBT
D811 +200V RECT
+200V
+135V
H1 H2
D813 +15V RECT
+15V
-15V
D812 -15V RECT
HV FV
DFT T806
FV
TO C BOARD FV (J701)
HV
TO PICTURE TU HV (V901)
CN3133
Q.P+ Q.P-
VM VM MUTE
Q.P OUT Q1610,1611
CN18
IC2071 ROTATION AMP
+8V
CN0002
ROT (+) ROT (-)
TO ROTATION COIL
D (2/2)
HV OUT, PIN OUT, ROTATION AMP, AUDIO/VIDEO IN, HEADPHONE JACK, AUDIO OUT JACK, SIRCS RECEIVER, FUNCTION SWITCH


CN0103
SDA
SCL
TO T BOARD
CN5002
⑧
CN0001
SDA
SCL
DISABLE
FOR SERVICE
J900
HEADPHONES
CN0741
P.PLS L
P.PLS R
SP L OUT
SP R OUT
TO J1 BOARD
CN552
⑫
CN 0747
SP PROT
TO K BOARD
CN0273
⑬
CN0740
SURROUND
CENTRE
AU MUTE
TO K BOARD
CN0271
⑭
J901
Y/C
VIDEO
L
R
IC603
+8V REG
REG
+8V
IC607
+5V REG
REG
on/off
+5V-2
BY SW
Q617
CN0102
ST CONT
PROTECT
SOFT START
TO G BOARD
CN0702
⑮
SOFT START
SWITCH
D633, Q616
TO B BOARD
CN417
⑪
CN0743
HD
H-PULSE
E/W
V+
V-
V-PROT
ABL
VM
TEXT BLK
H OUT DRIVE
Q801
HDT
T801
HDT
T802
IC801
DI-MOD
PIN DRIVE
Q803
D804
PIN
PROTECT
H DAMP
D802,803
PMT
T803
T804
HLT
+135V
IC802
VERITICAL DEFLECTION
BOOSTER
V OUT
Q804
V+
V-
DY1
DY
H+
H-
V-
V+
H DY
V DY
CN0004
CENTRE
RIGHT
LEFT
H CENTRE
D805,806
CN0521
G2
H2
H1
TO C BOARD
CN0421
⑯
T805 FBT
D811
+200V RECT
+200V
+135V
H1
H2
D813
+15V RECT
+15V
-15V
D812
-15V RECT
HV
FV
DFT
T806
FV
HV
TO C BOARD
FV (J701)
TO PICTURE TUBE
HV (V901)
⑰
CN3133
Q.P+
Q.P-
VM
VM MUTE
Q.P OUT
Q1610,1611
CN1830
Q.P-
Q.P+
VM IN
VM MUTE
VM AMP
Q1701, 1702,
Q1704, 1706
VM DRIVE
Q1707,1710
Q1711,1712
VM OUT
Q1703,1705
VM MUTE
Q1708
CN1701
Q.P-
QP +
QP
QP
VM
NECK
ASSY
VM (VM AMP, Q.P)
IC2071
ROTATION AMP
+8V
CN0002
ROT (+)
ROT (-)
TO ROTATION
COIL
D (2/2)
(HV OUT, PIN OUT,
ROTATION AMP, AUDIO/VIDEO IN,
HEADPHONE JACK, AUDIO OUT JACK,
SIRCS RECEIVER, FUNCTION SWITCH)

BLOCK DIAGRAM (7)


CN0772
S601
POWER
CN0723
CN0703
AC IN
AC IN
F601
D (1/2) (AC IN)
AC IN
AC IN
LINE FILTER
LF602
T603
+10V RECT
D636
STBY 5V REG
IC603
STBY +5V
T601 PIT
MAIN RECT
D601
RELAY
RY602
RELAY SW
Q621
VARISTOR
VDR601
+22V RECT
D605
+ 22V
+10V RECT
D607
+10V
+13.5V RECT
D611
+13.5V
+6.5V RECT
D608
+6.5V
+13.5V RECT
D609,610
+ 135V
+ 13.5V
D630
D623
CN0009
DGC
DGC
TH601
RELAY
RY601
RELAY SW
Q608
+10V
CN0008
FOR
CHECK
DGC CHK
DGC CHK
T602 PRT
+ 13.5V
+135V
PROTECT
Q601-604
IC601
POWER MODULE
CN0702
SOFT START SWITCH
Q605
SOFT START
PROTECT
ST CONT
TO D BOARD
CN0102
⑮
POWER
CONTROL
Q610-612
Q615
IC602
POWER DET
G (POWER SUPPLY)

5-2. CIRCU



5-3. SCHE

Note :

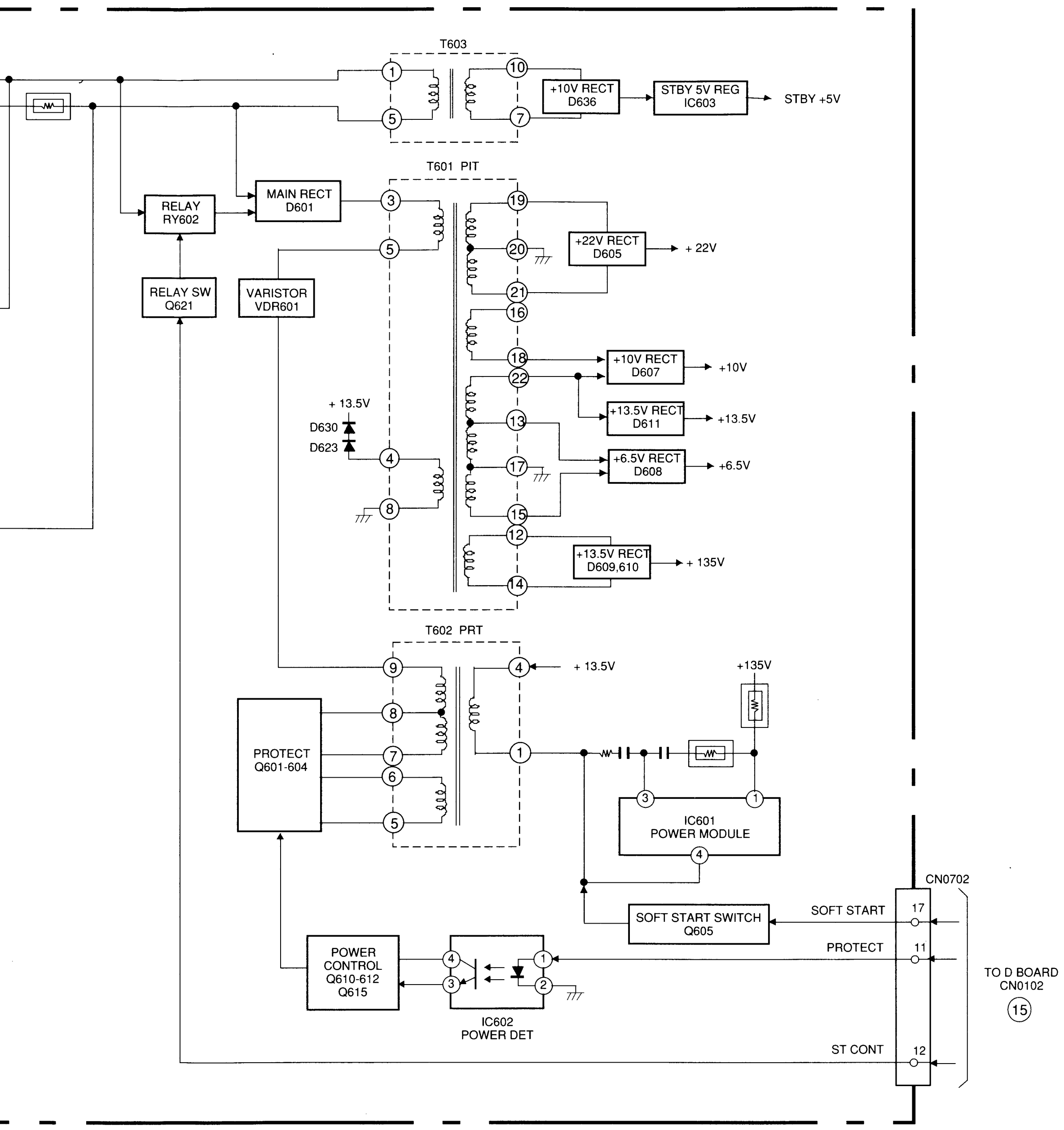
- All capac
50WV or
tantalums
- All resist
k = 1000
- Indicatio
electrical

Pitch : 5
Rating el

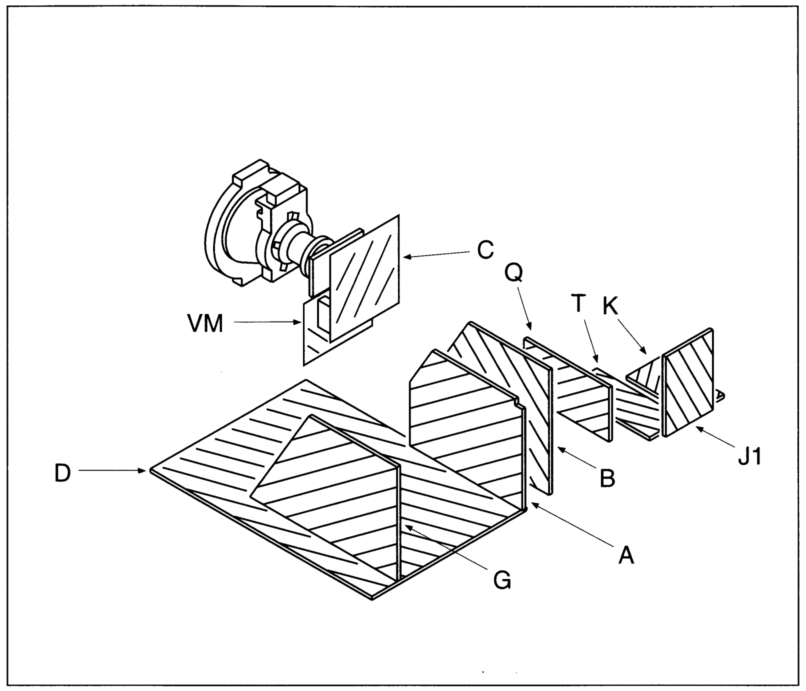
- All variab
B, unless
- ⊥
-

Note : The c
a
part n

Note : Les c
marq
Ne le
nume


T603
+10V RECT
D636
STBY 5V REG
IC603
STBY +5V
T601 PIT
RELAY
RY602
MAIN RECT
D601
+22V RECT
D605
+ 22V
RELAY SW
Q621
VARISTOR
VDR601
+10V RECT
D607
+10V
+13.5V RECT
D611
+13.5V
+6.5V RECT
D608
+6.5V
+ 13.5V
D630
D623
+13.5V RECT
D609,610
+ 135V
T602 PRT
+ 13.5V
+135V
PROTECT
Q601-604
IC601
POWER MODULE
CN0702
SOFT START SWITCH
Q605
SOFT START
PROTECT
POWER
CONTROL
Q610-612
Q615
IC602
POWER DET
ST CONT
TO D BOARD
CN0102
⑮

5-2. CIRCUIT BOARDS LOCATION


C
Q
T
K
VM
D
B
J1
A
G

5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note :

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms.
  k = 1000 , M = 1000K
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5 mm
Rating electrical power ¼ W

- ▨ : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation, or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊥ : earth - ground.
- ⫻ : earth - chassis.
- ⧺ : no mounted.

Note : The components identified by shading and marked ⚠ are critical for safety. Replace only with the part number specified.

Note : Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

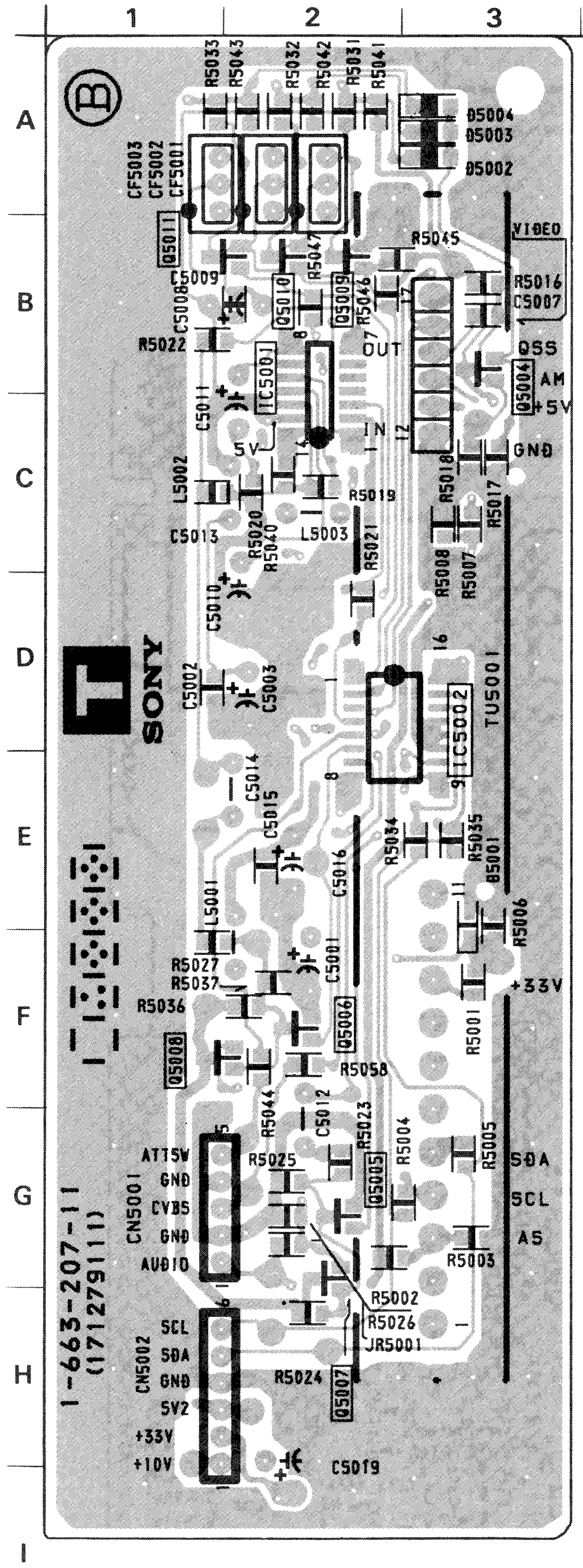
Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ✕	ADJUSTABLE RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

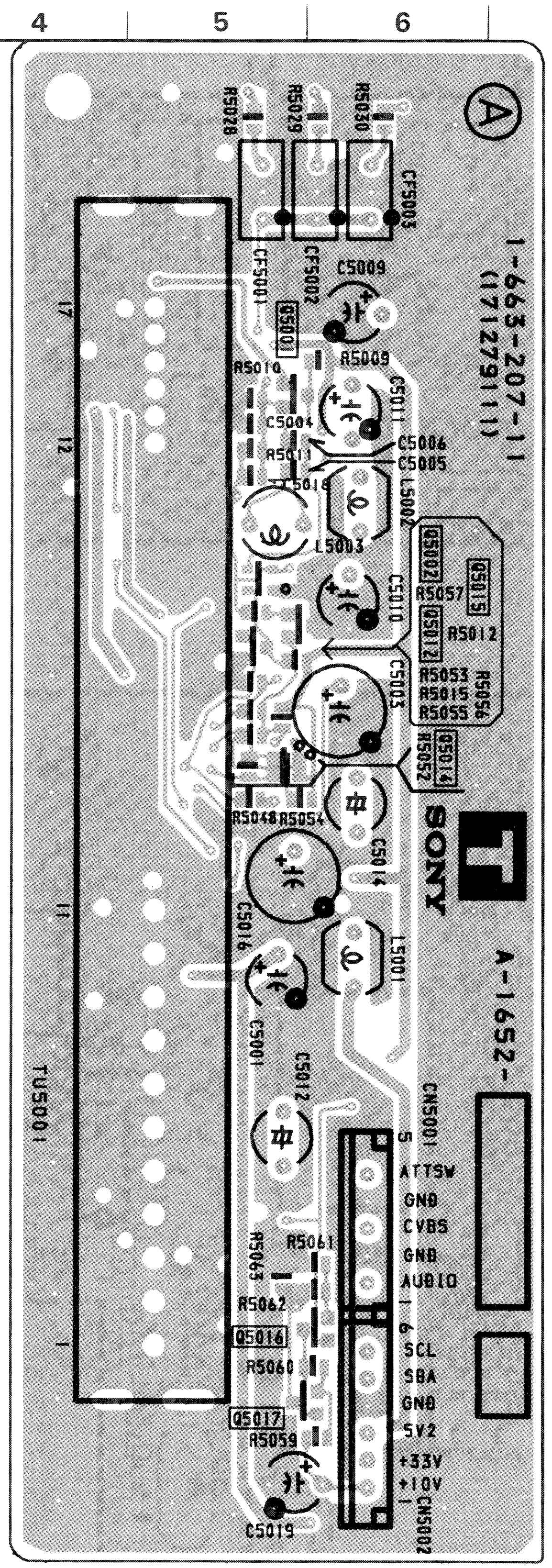
- Readings are taken with a colour-bar signal input.
- Readings are taken with 10MΩ digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
- ▬ : B+ bus.
- ➡ : signal path. (RF)

T [SUB TUNER]

T Board < Conductor Side >


1
2
3
A
B
C
D
E
F
G
H
I
B
R5033
R5043
R5032
R5042
R5031
R5041
D5004
D5003
D5002
CF5003
CF5002
CF5001
Q5011
R5045
VIDEO
R5016
C5007
R5047
Q5010
Q5009
R5046
C5009
C5008
R5022
IC5001
OUT
OSS
Q5004
AM
+5V
C5011
5V
IN
GND
L5002
R5019
R5018
R5017
C5013
R5020
R5040
L5003
R5021
R5008
R5007
C5010
SONY
T
C5002
C5003
IC5002
TU5001
C5014
C5015
C5016
R5034
R5035
R5001
L5001
R5006
R5027
R5037
R5036
C5001
+33V
Q5008
Q5006
R5058
R5044
C5012
R5023
R5004
R5005
ATTSW
GND
CVBS
GND
AUDIO
CN5001
R5025
Q5005
SDA
SCL
AS
R5003
R5002
R5026
JR5001
1-663-207-11
(1712791 11)
CN5002
SCL
SDA
GND
5V2
+33V
+10V
R5024
Q5007
C5019

T Board < Component Side >


4
5
6
A
R5028
R5029
R5030
CF5003
CF5001
CF5002
C5009
Q5001
1-663-207-11
(1712791 11)
R5010
R5009
C5011
C5004
R5011
C5006
C5005
R5018
L5002
L5003
Q5002
Q5015
R5057
Q5012
R5012
C5010
C5003
R5053
R5015
R5055
R5056
Q5014
R5052
R5048
R5054
SONY
T
C5014
C5016
L5001
A-1652-
C5001
C5012
TU5001
CN5001
ATTSW
GND
CVBS
GND
AUDIO
R5063
R5061
R5062
Q5016
R5060
SCL
SDA
GND
5V2
+33V
+10V
Q5017
R5059
C5019
CN5002
17
12
11
1

T BOARD

IC	
IC5001	B-2
IC5002	D-3
TANSISTOR	
Q5001	B-5
Q5002	C-6
Q5004	B-3
Q5005	G-2
Q5006	F-2
Q5007	H-2
Q5008	F-1
Q5009	B-2
Q5010	B-2
Q5011	B-1
Q5012	D-6
Q5014	D-6
Q5015	D-6
Q5016	H-5
Q5017	H-5
DIODE	
D5002	A-3
D5003	A-3
D5004	A-3

T BOARD IC VOLTAGE TABLE

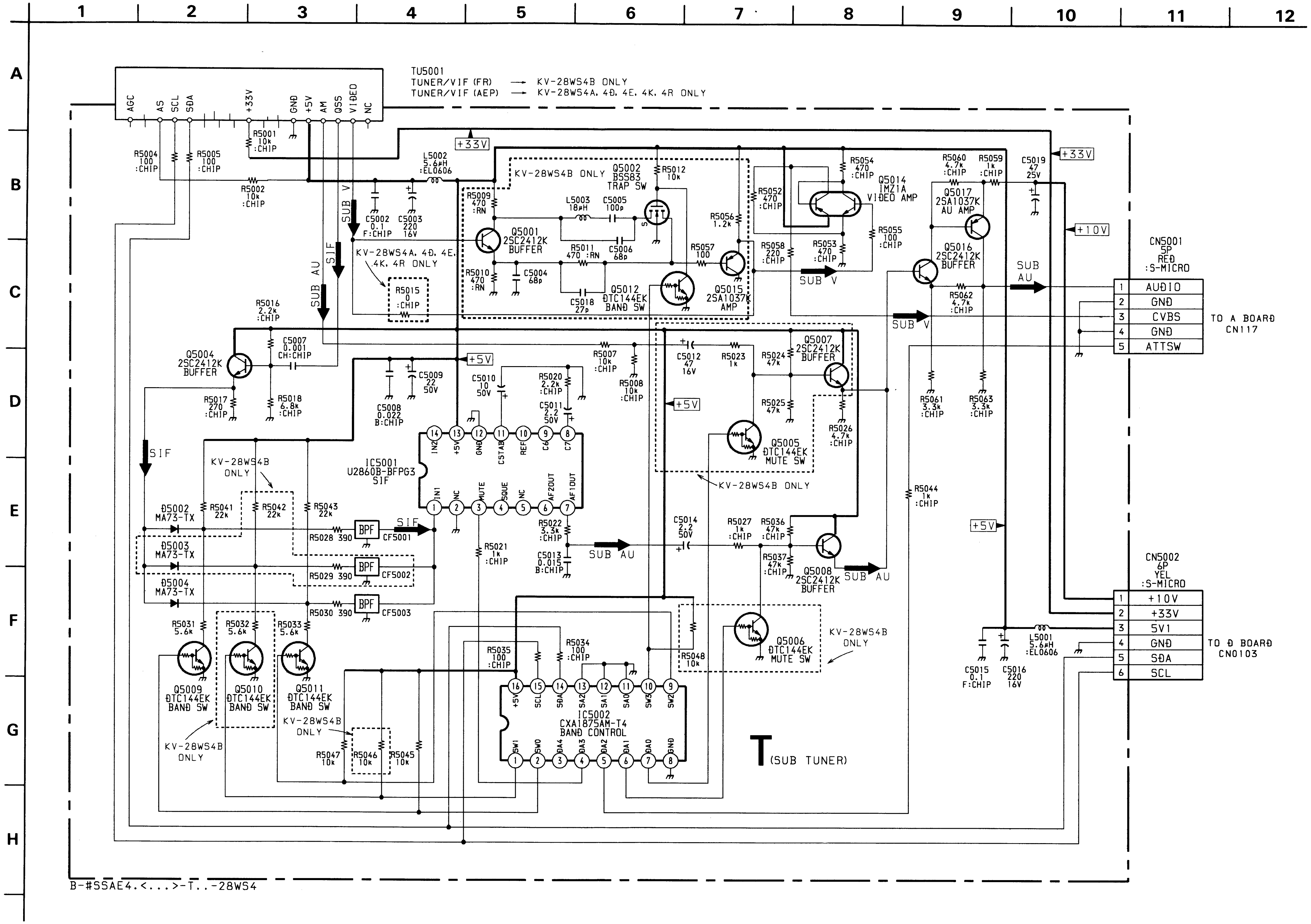
IC Voltage Table

Ref No	Pin No	Voltage (V)
IC5001	1	1.8
	3	4.7
	4	3.4
	6-7	2.4
	8-10	2.1
	11	4.4
	13	4.9
	14	1.8
IC5002	2	4.0
	3	0.5
	4	4.7
	5	2.8
	6	0.5
	7	4.7
	9	0.1
	14	4.4
	15	4.0
	16	5.0

T BOARD TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table

Ref No	B Base	C Collector	E Emitter
Q5008	2.4	5.0	1.8
Q5009	4.0	-	-
Q5011	0.1	4.8	-
Q5016	1.8	8.2	1.3
Q5017	8.2	2.3	9.0


1
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7
8
9
10
11
12
A
B
C
D
E
F
G
H
TU5001
TUNER/VIF (FR) → KV-28WS4B ONLY
TUNER/VIF (AEP) → KV-28WS4A, 4D, 4E, 4K, 4R ONLY
AGC
AS
SCL
SDA
+33V
GND
+5V
AM
QSS
VIDEO
NC
R5001 10k :CHIP
R5004 100 :CHIP
R5005 100 :CHIP
R5002 10k :CHIP
L5002 5.6μH :EL0606
+33V
C5002 0.1 F:CHIP
C5003 220 16V
SUB V
SIF
SUB AU
KV-28WS4A, 4D, 4E, 4K, 4R ONLY
R5015 0 :CHIP
KV-28WS4B ONLY
Q5002 BSS83 TRAP SW
R5012 10k
R5009 470 :RN
L5003 18μH
C5005 100p
Q5001 2SC2412K BUFFER
R5011 470 :RN
C5006 68p
R5010 470 :RN
C5004 68p
C5018 27p
Q5012 DTC144EK BAND SW
R5056 1.2k
R5057 100
Q5015 2SA1037K AMP
R5052 470 :CHIP
R5054 470 :CHIP
Q5014 IMZ1A VIDEO AMP
R5055 100 :CHIP
R5058 220 :CHIP
R5053 470 :CHIP
SUB V
R5060 4.7k :CHIP
R5059 1k :CHIP
Q5017 2SA1037K AU AMP
Q5016 2SC2412K BUFFER
R5062 4.7k :CHIP
C5019 47 25V
+33V
+10V
SUB AU
SUB V
CN5001 5P RED :S-MICRO
1 AUDIO
2 GND
3 CVBS
4 GND
5 ATTSW
TO A BOARD CN117
R5016 2.2k :CHIP
C5007 0.001 CH:CHIP
Q5004 2SC2412K BUFFER
R5017 270 :CHIP
R5018 6.8k :CHIP
+5V
C5009 22 50V
C5008 0.022 B:CHIP
C5010 10 50V
R5020 2.2k :CHIP
C5011 2.2 50V
R5007 10k :CHIP
R5008 10k :CHIP
C5012 47 16V
R5023 1k
R5024 47k
Q5007 2SC2412K BUFFER
+5V
R5025 47k
R5026 4.7k :CHIP
Q5005 DTC144EK MUTE SW
KV-28WS4B ONLY
R5061 3.3k :CHIP
R5063 3.3k :CHIP
R5044 1k :CHIP
IN2
+5V
GND
CSTAB
REF
C6
C7
IC5001 U2860B-BFPG3 SIF
IN1
NC
MUTE
SQUE
NC
AF2OUT
AF1OUT
SIF
KV-28WS4B ONLY
D5002 MA73-TX
R5041 22k
R5042 22k
R5043 22k
BPF
R5028 390
CF5001
D5003 MA73-TX
R5029 390
CF5002
D5004 MA73-TX
R5030 390
CF5003
R5022 3.3k :CHIP
C5013 0.015 B:CHIP
R5021 1k :CHIP
SUB AU
C5014 2.2 50V
R5027 1k :CHIP
R5036 47k :CHIP
R5037 47k :CHIP
Q5008 2SC2412K BUFFER
SUB AU
+5V
CN5002 6P YEL :S-MICRO
1 +10V
2 +33V
3 5V1
4 GND
5 SDA
6 SCL
TO D BOARD CN0103
L5001 5.6μH :EL0606
C5015 0.1 F:CHIP
C5016 220 16V
R5031 5.6k
R5032 5.6k
R5033 5.6k
Q5009 DTC144EK BAND SW
Q5010 DTC144EK BAND SW
Q5011 DTC144EK BAND SW
KV-28WS4B ONLY
KV-28WS4B ONLY
R5047 10k
R5046 10k
R5045 10k
R5035 100 :CHIP
R5034 100 :CHIP
R5048 10k
Q5006 DTC144EK MUTE SW
KV-28WS4B ONLY
+5V
SCL
SDA
SA2
SA1
SA0
SW3
SW2
IC5002 CXA1875AM-T4 BAND CONTROL
SW1
SW0
DA4
DA3
DA2
DA1
DA0
GND
T (SUB TUNER)
B-#SSAE4.<...>-T..-28WS4

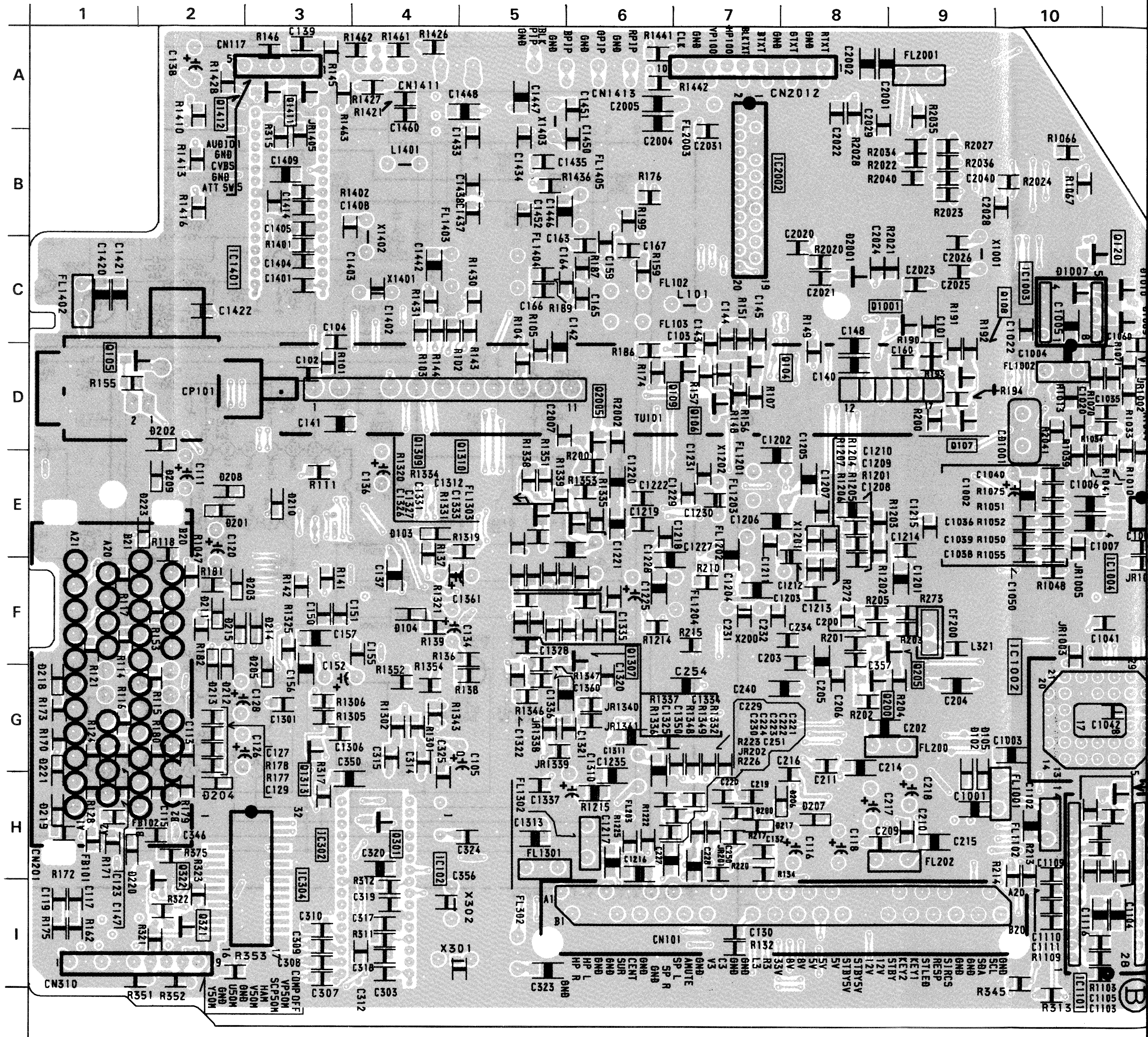
A BOARD

IC	
IC101	E-22
IC102	H-4
IC104	C-19
IC201	G-19
IC302	H-3
IC303	I-22
IC304	H-3
IC1001	F-14
IC1002	G-10
IC1003	C-10
IC1004	E-11
IC1101	I-10
IC1201	E-16
IC1202	E-18
IC1301	G-19
IC1302	H-20
IC1303	G-21
IC1401	C-2
IC1402	C-23
IC2001	C-17
IC2004	B-19
TRANSISTOR	
Q102	E-23
Q103	C-18
Q104	D-8
Q105	D-1
Q106	D-7
Q107	D-9
Q108	C-10
Q110	E-22
Q112	B-19
Q120	C-11
Q200	G-8
Q205	F-9
Q301	H-4
Q302	I-22
Q315	H-23
Q316	I-24
Q317	I-24
Q318	H-22
Q1001	C-9
Q1101	G-11
Q1201	H-19
Q1202	H-19
Q1301	H-22
Q1302	F-21
Q1303	F-21
Q1304	G-21
Q1305	G-21
Q1306	G-22
Q1307	F-6
Q1308	F-20
Q1309	D-4
Q1310	D-5
Q1311	G-22
Q1312	F-22
Q1313	G-3
Q1314	G-20
Q1401	A-23
Q1402	B-23
Q1403	B-23
Q1404	B-21
Q1411	A-3
Q1412	A-2
Q2005	D-6
Q2006	B-15
Q2007	B-15
DIODE	
D102	G-9
D103	E-4
D104	F-4
D105	G-9
D199	C-19
D200	H-7
D201	E-2
D202	D-2
D203	F-3
D204	H-2
D205	F-3
D206	H-8
D207	H-8
D208	E-2
D209	E-2
D210	E-3
D211	F-2
D212	G-2
D213	G-2
D214	F-3
D215	F-2
D217	H-7
D218	G-1
D219	H-1
D220	H-1
D221	G-1
D223	E-2
D301	H-22
D1007	C-10
D1008	C-14
D1009	C-11
D1010	C-11
D1401	C-23
D2001	C-8

A

AV INPUT/OUTPUT INTERFACE, DIGITAL COMB FILTER, COLOR DECODER,SOUND PROCESSOR, DOLBY NOISE REDUCTION, MICRO CONTROLLER, MEGA TEXT

A Board < Conductor Side >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A
B
C
D
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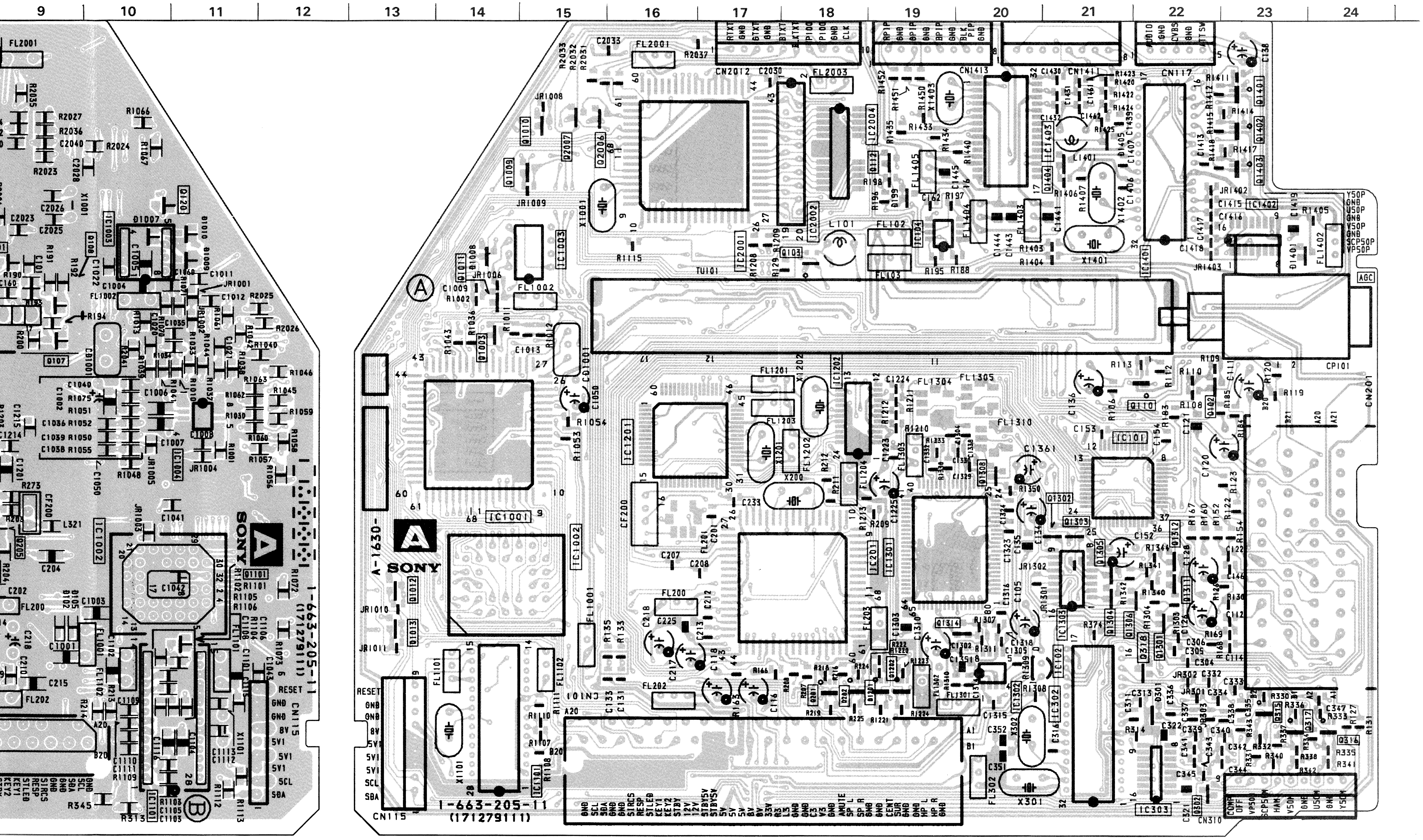
F
G
H
I
CN101
CN117
CN310
CN201
CN1411
CN1413
CN2012
IC1401
IC2002
IC302
IC304
IC102
IC1002
IC1003
IC1004
IC1101
CP101
TU101
X301
X302
X1001
X1402
FL1402
FL2001
FL1301
FL1001
FL200
FL202

A Board < Component Side >


9
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14
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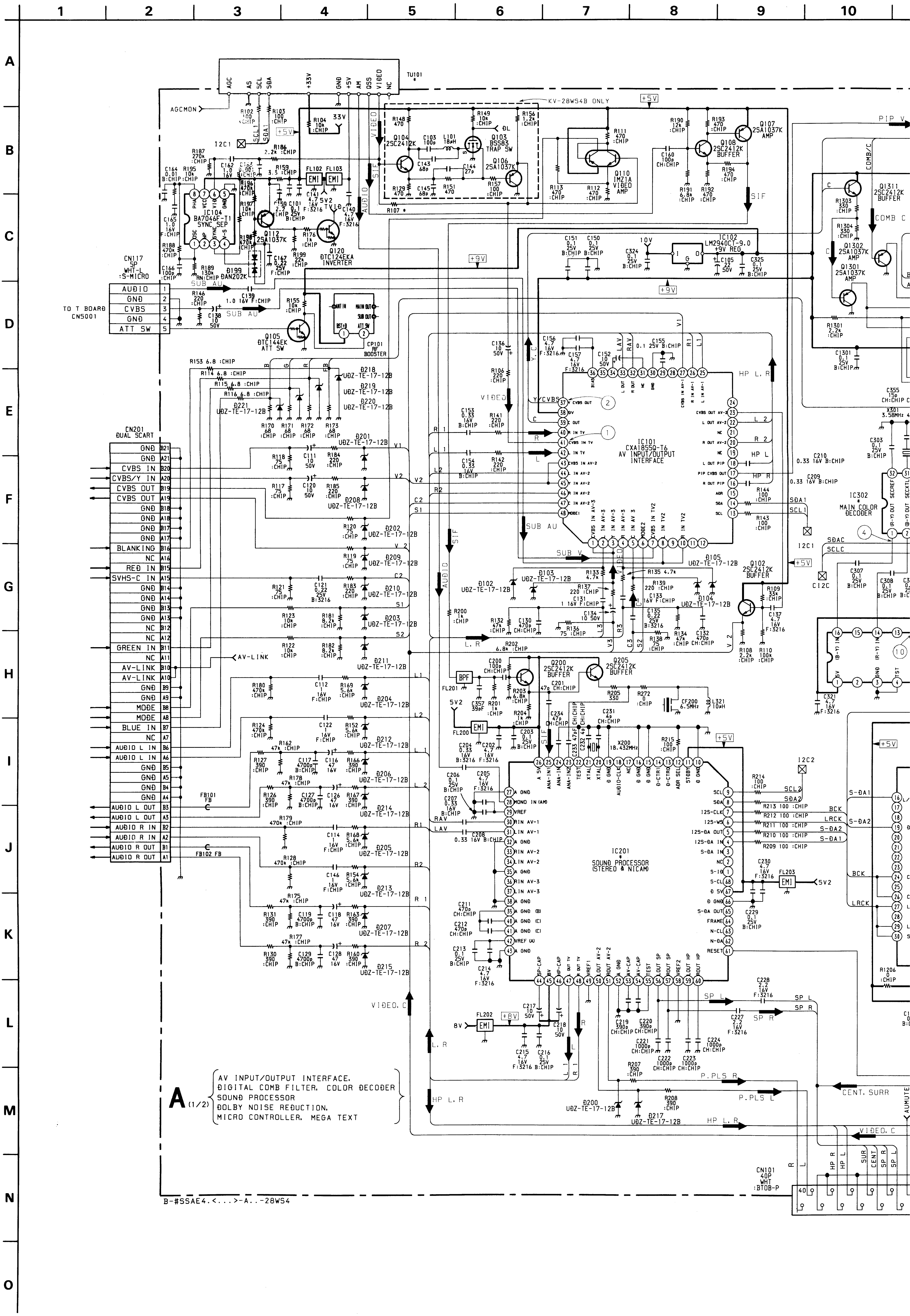
16
17
18
19
20
21
22
23
24
CN2012
FL2003
CN1413
CN1411
CN117
TU101
CP101
AGC
CN201
CN115
CN310
IC1001
IC1002
IC1003
IC1201
IC201
IC1301
IC101
IC102
IC302
IC303
IC2001
IC2002
IC1401
IC1402
IC1403
X1001
X1101
X1201
X200
X301
X1401
X1402
X1403
L101
L1401
FL102
FL103
FL1002
FL1001
FL1201
FL1202
FL1203
FL1204
FL1304
FL1305
FL1310
FL200
FL202
FL203
FL302
CF200
SONY
A
A-1630-
1-663-205-11
(171279111)
RESET
GND
GND
8V
5V1
5V1
5V1
SCL
SDA
RTXT
GND
GTXT
GND
BTXT
BLKTXT
P100
P100
GND
CLK
RPIP
GND
GPIP
GND
BPIP
GND
BLK PIP
GND
U010
GND
CVBS
GND
TTSW
Y50P
GND
U50P
GND
V50P
GND
SCP50P
VP50P
COMP OFF
VP50
SCP5
HAM
Y50N
GND
U50N
GND
Y50N
GND
SCL
SDA
GND
GND
SIRCS
RESP
STLED
KEY1
KEY2
STBY
12V
12V
STBY5V
STBY5V
5V
5V
8V
8V
33V
R3
L3
GND
GND
C3
Y3
GND
AMUTE
SP L
SP R
GND
GND
CENT
SUR
GND
GND
HP L
HP R
GND
A20
A1
B1
B20
1-663-205-11
(171279111)
RESET
GND
GND
8V
5V1
5V1
5V1
SCL
SDA
CN115



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4
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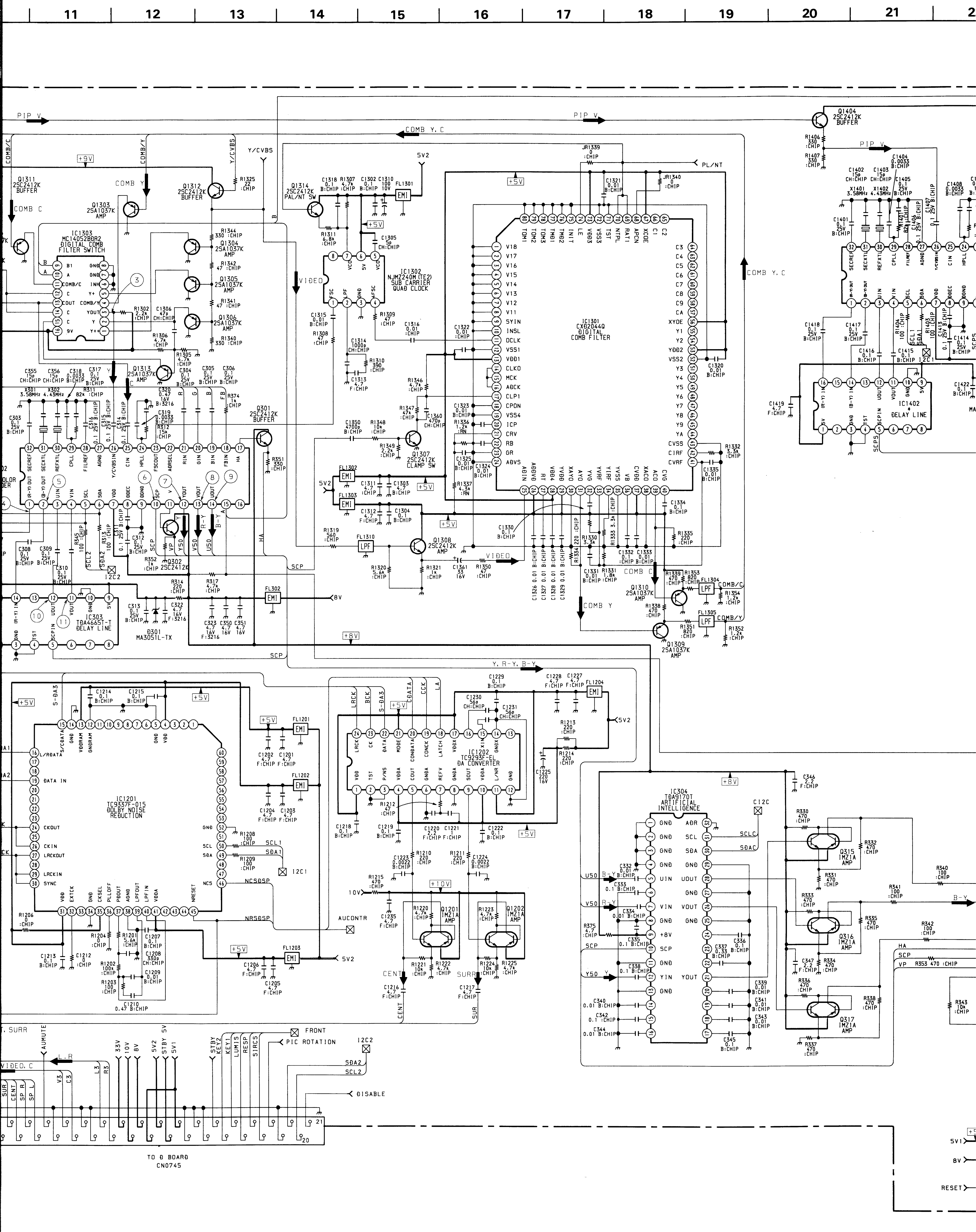
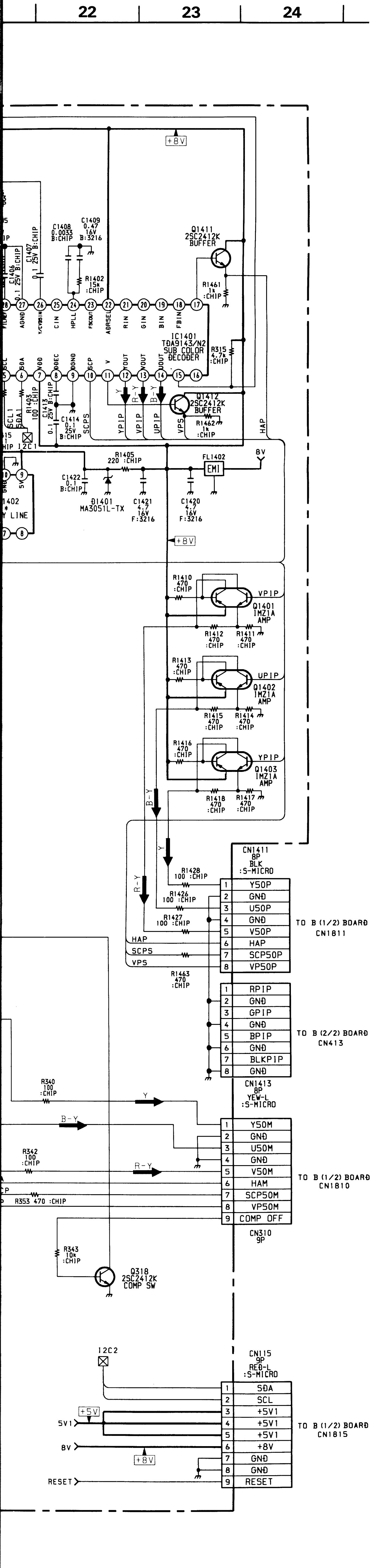
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TU101
AGC
AS
SCL
SDA
+33V
GND
+5V
AM
QSS
VIDEO
NC
KV-28WS4B ONLY
AGCMON
IC104
BA7046F-T1
SYNC SEP
Q112
2SA1037K
Q120
DTC124EKA
INVERTER
Q104
2SC2412K
Q103
BSS83
TRAP SW
Q106
2SA1037K
Q110
IMZ1A
VIDEO
AMP
Q107
2SA1037K
AMP
Q108
2SC2412K
BUFFER
IC102
LM2940CT-9.0
+9V REG
CN117
5P
WHT-L
:S-MICRO
AUDIO
GND
CVBS
GND
ATT SW
TO T BOARD
CN5001
Q105
DTC144EK
ATT SW
CP101
RF
BOOSTER
CN201
DUAL SCART
GND
CVBS IN
CVBS/Y IN
CVBS OUT
CVBS OUT
BLANKING
NC
RED IN
SVHS-C IN
GREEN IN
AV-LINK
MODE
BLUE IN
AUDIO L IN
AUDIO L OUT
AUDIO R IN
AUDIO R OUT
IC101
CXA1855Q-T6
AV INPUT/OUTPUT
INTERFACE
Q102
2SC2412K
BUFFER
Q200
2SC2412K
BUFFER
Q205
2SC2412K
BUFFER
IC201
SOUND PROCESSOR
(STEREO & NICAM)
X200
18.432MHz
CF200
6.5MHz
IC302
MAIN COLOR
DECODER
Q1311
2SC2412K
BUFFER
Q1302
2SA1037K
AMP
Q1301
2SA1037K
AMP
PIP V
COMB C
SUB AU
SUB V
VIDEO
SIF
AUDIO
HP L, R
L, R
VIDEO, C
SP L
SP R
P.PLS R
P.PLS L
CENT. SURR
CN101
40P
WHT
:BTOB-P
B-#SSAE4.<...>-A..-28WS4

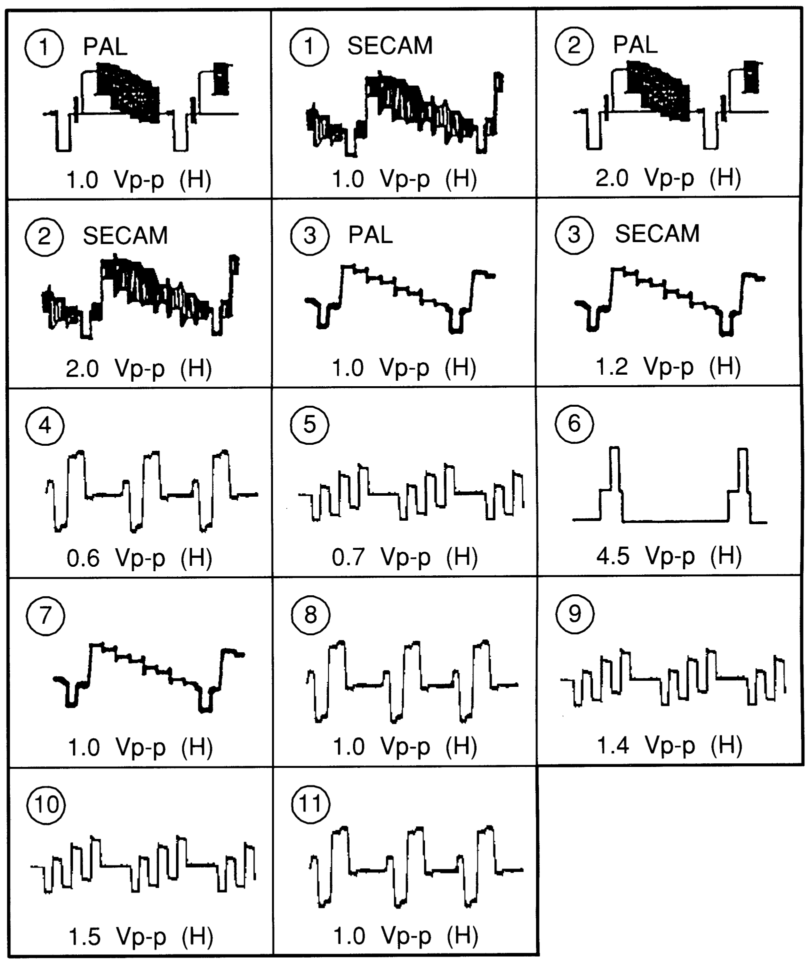
A(1/2)

AV INPUT/OUTPUT INTERFACE,
DIGITAL COMB FILTER, COLOR DECODER
SOUND PROCESSOR
DOLBY NOISE REDUCTION,
MICRO CONTROLLER, MEGA TEXT


11
12
13
14
15
16
17
18
19
20
21
PIP V
COMB Y, C
COMB/C
COMB/Y
Y/CVBS
+9V
Q1311 2SC2412K BUFFER
COMB Y
COMB C
Q1303 2SA1037K AMP
Q1312 2SC2412K BUFFER
IC1303 MC14052BDR2 DIGITAL COMB FILTER SWITCH
Q1304 2SA1037K AMP
Q1305 2SA1037K AMP
Q1306 2SA1037K AMP
Q1313 2SA1037K AMP
Q301 2SC2412K BUFFER
Q302 2SC2412K
IC303 TDA4665T-T DELAY LINE
D301 MA3051L-TX
5V2
Q1314 2SC2412K PAL/NT SW
FL1301
IC1302 NJMZ240M(TE2) SUB CARRIER QUAD CLOCK
VIDEO
Q1307 2SC2412K CLAMP SW
Q1308 2SC2412K AMP
PL/NT
IC1301 CXD2044Q DIGITAL COMB FILTER
Q1310 2SA1037K AMP
Q1309 2SA1037K AMP
COMB Y
8V
SCP
+8V
Y, R-Y, B-Y
Q1404 2SC2412K BUFFER
IC1402 DELAY LINE
X1401 3.58MHz
X1402 4.43MHz
IC1201 TC9337F-015 DOLBY NOISE REDUCTION
IC1202 TC9293F-EL DA CONVERTER
Q1201 IMZ1A AMP
Q1202 IMZ1A AMP
AUCONTR
CENT
SURR
NCSDSP
NRSDSP
I2C1
I2C2
I2C
IC304 TDA9170T ARTIFICIAL INTELLIGENCE
Q315 IMZ1A AMP
Q316 IMZ1A AMP
Q317 IMZ1A AMP
U50
V50
Y50
B-Y
R-Y
HA
VP
R353 470 :CHIP
FRONT
PIC ROTATION
DISABLE
SDA2
SCL2
AUMUTE
L, R
VIDEO, C
33V
10V
8V
5V2
STBY 5V
5V1
STBY
KEY1
LUMIS
RESP
SIRCS
TO D BOARD CN0745
5V1
8V
RESET


22
23
24
+8V
C1408 0.0033 B:CHIP
C1409 0.47 16V B:3216
C1407 0.1 25V B:CHIP
R1402 15k :CHIP
Q1411 2SC2412K BUFFER
R1461 1k :CHIP
IC1401 TDA9143/N2 SUB COLOR DECODER
R315 4.7k :CHIP
AGND
CIN
HPLL
FSCOUT
ADRSEL
RIN
GIN
BIN
FBIN
SCL
SDA
VDD
DGND
SCP
YOUT
UOUT
VOUT
Q1412 2SC2412K BUFFER
R1462 1k :CHIP
YPIP
VPIP
UPIP
VPS
SCPS
HAP
R1403 100 :CHIP
C1413 0.1 25V B:CHIP
C1414 0.1 25V B:CHIP
R1405 220 :CHIP
FL1402 EMI
8V
C1422 0.1 B:CHIP
D1401 MA3051L-TX
C1421 4.7 16V F:3216
C1420 4.7 16V F:3216
Y LINE
I2C1
+8V
R1410 470 :CHIP
VPIP
Q1401 IMZ1A AMP
R1412 470 :CHIP
R1411 470 :CHIP
R1413 470 :CHIP
UPIP
Q1402 IMZ1A AMP
R1415 470 :CHIP
R1414 470 :CHIP
R1416 470 :CHIP
YPIP
Q1403 IMZ1A AMP
R1418 470 :CHIP
R1417 470 :CHIP
B-Y
Y
R-Y
CN1411 8P BLK :S-MICRO
R1428 100 :CHIP
R1426 100 :CHIP
R1427 100 :CHIP
1 Y50P
2 GND
3 U50P
4 GND
5 V50P
6 HAP
7 SCP50P
8 VP50P
TO B (1/2) BOARD CN1811
HAP
SCPS
VPS
R1463 470 :CHIP
1 RPIP
2 GND
3 GPIP
4 GND
5 BPIP
6 GND
7 BLKPIP
8 GND
TO B (2/2) BOARD CN413
CN1413 8P YEW-L :S-MICRO
R340 100 :CHIP
Y
B-Y
R342 100 :CHIP
R-Y
R353 470 :CHIP
1 Y50M
2 GND
3 U50M
4 GND
5 V50M
6 HAM
7 SCP50M
8 VP50M
9 COMP OFF
TO B (1/2) BOARD CN1810
CN310 9P
R343 10k :CHIP
Q318 2SC2412K COMP SW
I2C2
CN115 9P RED-L :S-MICRO
1 SDA
2 SCL
3 +5V1
4 +5V1
5 +5V1
6 +8V
7 GND
8 GND
9 RESET
TO B (1/2) BOARD CN1815
+5V
5V1
8V
+8V
RESET

WAVEFORMS A BOARD



A (1/2) BOARD TRANSISTOR VOLTAGE TABLE

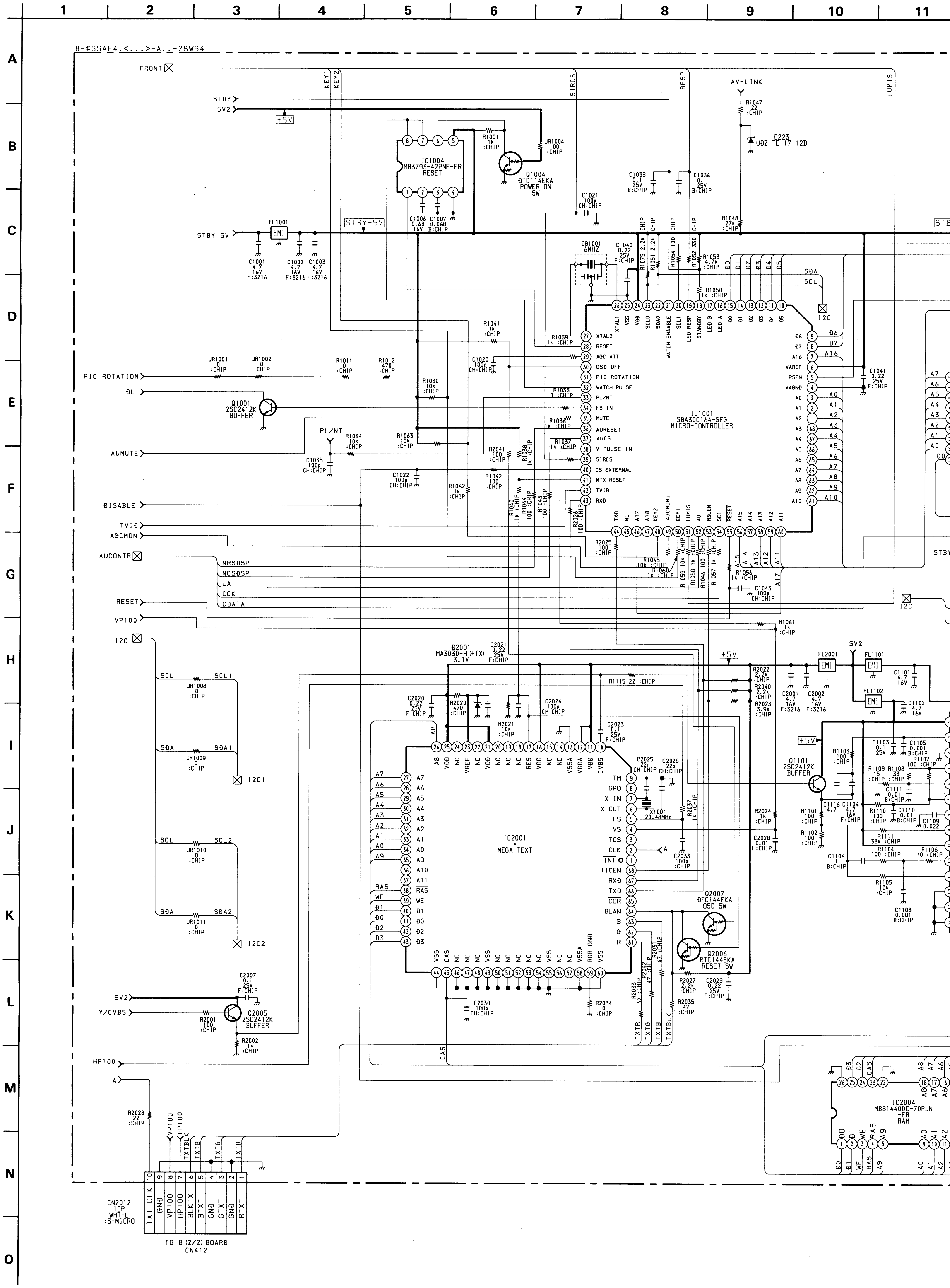
Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q102	1.9	4.7	1.3
Q105	0.08	4.5	0.08
Q107	4.4	1.7	5.0
Q108	1.8	4.4	1.2
Q112	4.3	4.9	5.0
Q120	4.6	0.1	0.1
Q301	0.5	8.0	0.4
Q302	-	8.0	0.3
Q318	0.1	5.2	0.1
Q1201	8.6	5.0	9.2
Q1202	0.7	5.0	9.2
Q1301	1.9	-	0.2
Q1302	-	-	0.6
Q1303	0.8	-	1.5
Q1304	2.2	-	0.1
Q1305	2.0	-	0.1
Q1306	1.7	-	-
Q1307	-	3.4	0.1
Q1308	3.5	4.7	2.9
Q1309	0.9	0.1	1.6
Q1310	1.0	0.1	1.6
Q1311	4.5	9.0	3.9
Q1312	4.5	9.0	-
Q1313	4.6	0.7	0.1
Q1314	4.8	4.7	4.3
Q1404	4.5	7.8	3.8
Q1411	0.5	8.0	0.6
Q1412	0.1	8.0	0.1
Q1201	2.6	8.6	2.1
Q1202	2.6	8.6	2.1

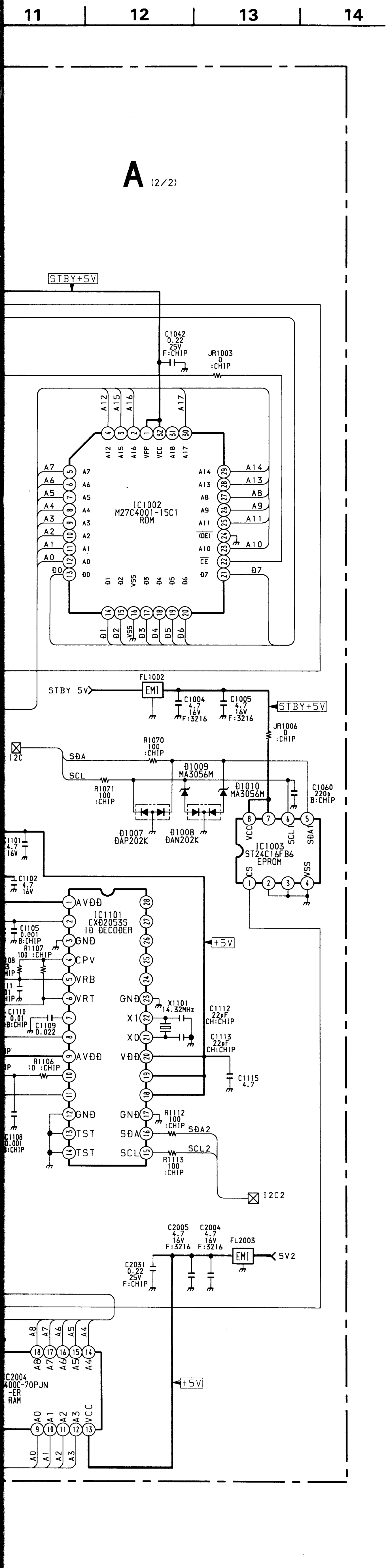
A (1/2) BOARD IC VOLTAGE TABLE

IC Voltage Table					
Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)
IC201	4	0.5	IC1201	4	4.7
	5-6	4.7		13	4.7
	7	2.4		31	4.7
	8-9	4.7		35	4.7
	20	2.4		37	2.7
	24	4.4		39	2.2
	25	8.8		40	2.7
	26	4.4		41	4.7
	28	3.8		45	4.8
	29	2.7		29	2.7
	30-31	3.8		30-31	3.8
	39-42	3.8		39-42	3.8
	44	6.2		44	6.2
	45	8.0		45	8.0
	46	7.0	IC1303	1	5.0
	47-48	3.8		5	0.6
	50-51	3.7		11-12	3.0
	53-54	3.8		14	1.4
	56-57	1.2		16	1.2
	61	4.8	IC1401	1-2	2.0
IC302	1-2	2.0		3-4	2.4
	3-4	2.4		5	3.5
	5	3.0		6	4.0
	6	4.0		7	7.8
	7	8.0		8	5.0
	8	5.0		10	0.8
	10	0.5		12	2.4
	12	3.2		13-14	2.6
	13-14	2.6		15	8.0
	15	8.0		17	0.3
	17	0.3		22	7.8
	19	1.6		24	3.6
	21	1.0		26	3.3
	23-24	4.0		28	3.5
	26	3.7		29	4.3
	28	3.5		30	2.6
	29	5.0		31	2.6
	30	2.5		32	3.8
	31	2.5			
	32	2.0			

A BOARD * MARK

Model / Ref. No.	28WS4A	28WS4B	28WS4D	28WS4E	28WS4K	28WS4R
IC201	MSP3400C-PP-C6-T-ND	MSP3410B-PS-F7-T-ND	MSP3400C-PP-C6-T-ND	MSP3410B-PS-F7-T-ND	MSP3400C-PP-C6-T-ND	MSP3400C-PP-C6-T-ND
IC302	TDA9144/N2	TDA9143/N2	TDA9144/N2	TDA9144/N2	TDA9144/N2	TDA9144/N2
IC1402	TDA4665T-T	—	TDA4665T-T	TDA4665T-T	TDA4665T-T	TDA4665T-T
IC2001	SDA5275	SDA5275	SDA5275	SDA5273P-C26-GEG	SDA5275	SDA5275
R107	0:CHIP	—	0:CHIP	0:CHIP	0:CHIP	0:CHIP
TU101	TUVIF (AEP)	TUVIF (FR)	TUVIF (AEP)	TUVIF (AEP)	TUVIF (AEP)	TUVIF (AEP)


B-#SSAE4.<...>-A..-28WS4
FRONT
STBY
5V2
+5V
KEY1
KEY2
SIRCS
RESP
AV-LINK
LUMIS
IC1004
MB3793-42PNF-ER
RESET
Q1004
DTC114EKA
POWER ON SW
JR1004 100 :CHIP
R1001 1k :CHIP
D223
UDZ-TE-17-12B
R1047 22 :CHIP
R1048 27k :CHIP
C1039 0.1 25V B:CHIP
C1036 0.1 25V B:CHIP
C1021 100p CH:CHIP
STBY 5V
FL1001
EMI
STBY+5V
C1001 4.7 16V F:3216
C1002 4.7 16V F:3216
C1003 4.7 16V F:3216
C1006 0.68 16V
C1007 0.068 B:CHIP
CD1001 6MHZ
C1040 0.22 25V F:CHIP
R1075 2.2k
R1051 2.2k
R1054 100
R1052 330
R1053 4.7k :CHIP
R1050 1k :CHIP
SDA
SCL
I2C
IC1001
SDA30C164-GEG
MICRO-CONTROLLER
XTAL2
RESET
AGC ATT
OSD OFF
PIC ROTATION
WATCH PULSE
PL/NT
FS IN
MUTE
AURESET
AUCS
V PULSE IN
SIRCS
CS EXTERNAL
MTX RESET
TVID
RXD
TXD
VARF
PSEN
VAGND
C1041 0.22 25V F:CHIP
PIC ROTATION
DL
Q1001
2SC2412K
BUFFER
AUMUTE
PL/NT
DISABLE
TVID
AGCMON
AUCONTR
NRSDSP
NCSDSP
LA
CCK
CDATA
RESET
VP100
I2C
SCL
SCL1
SDA
SDA1
I2C1
SCL2
SDA2
I2C2
JR1008 0 :CHIP
JR1009 0 :CHIP
JR1010 0 :CHIP
JR1011 0 :CHIP
R1061 1k :CHIP
D2001
MA3030-H (+TX)
3.1V
C2021 0.22 25V F:CHIP
+5V
R1115 22 :CHIP
R2022 2.2k :CHIP
R2040 2.2k :CHIP
R2023 3.9k :CHIP
FL2001
EMI
FL1101
FL1102
C2001 4.7 16V F:3216
C2002 4.7 16V F:3216
C1101 4.7 16V
C1102 4.7 16V
C2020 0.22 25V F:CHIP
R2020 470 :CHIP
C2024 100p CH:CHIP
R2021 10k :CHIP
C2023 0.1 25V F:CHIP
C2025 22p CH:CHIP
C2026 22p CH:CHIP
X1001 20.48MHz
R2037 1k :CHIP
IC2001
MEGA TEXT
TM
GPO
X IN
X OUT
HS
VS
TCS
CLK
INT
IICEN
RXD
TXD
COR
BLAN
B
G
R
RAS
WE
C2033 100p :CHIP
R2024 1k :CHIP
C2028 0.01 F:CHIP
Q2007
DTC144EKA
OSD SW
Q2006
DTC144EKA
RESET SW
R2027 2.2k :CHIP
C2029 0.22 25V F:CHIP
R2035 47 :CHIP
R2034 0 :CHIP
C2030 100p CH:CHIP
Q1101
2SC2412K
BUFFER
R1101 100 :CHIP
R1102 100 :CHIP
R1103 100 :CHIP
C1106 1 B:CHIP
R1105 10k :CHIP
C1108 0.001 B:CHIP
R1104 100 :CHIP
R1106 10 :CHIP
R1111 33k :CHIP
C2007 0.1 25V F:CHIP
5V2
Y/CVBS
Q2005
2SC2412K
BUFFER
R2001 100 :CHIP
R2002 1k :CHIP
HP100
A
CAS
TXTR
TXTG
TXTB
TXTBLK
R2028 22 :CHIP
VP100
HP100
IC2004
MB814400C-70PJN
-ER
RAM
CN2012
10P
WHT-L
:S-MICRO
TXT CLK
GND
VP100
HP100
BLKTXT
BTXT
GND
GTXT
GND
RTXT
TO B (2/2) BOARD
CN412


11
12
13
14
A (2/2)
STBY+5V
C1042 0.22 25V F:CHIP
JR1003 0 :CHIP
IC1002 M27C4001-15C1 ROM
A12
A15
A16
VPP
VCC
A18
A17
A14
A13
A8
A9
A11
OE
A10
CE
D7
A7
A6
A5
A4
A3
A2
A1
A0
D0
D1
D2
VSS
D3
D4
D5
D6
STBY 5V
FL1002 EMI
C1004 4.7 16V F:3216
C1005 4.7 16V F:3216
JR1006 0 :CHIP
I2C
SDA
SCL
R1070 100 :CHIP
R1071 100 :CHIP
D1009 MA3056M
D1010 MA3056M
D1007 DAP202K
D1008 DAN202K
C1060 220p B:CHIP
IC1003 ST24C16FB6 EPROM
IC1101 CXD2053S ID DECODER
AVDD
GND
CPV
VRB
VRT
TST
X1101 14.32MHz
X1
X0
VDD
C1112 22pF CH:CHIP
C1113 22pF CH:CHIP
C1115 4.7
R1112 100 :CHIP
R1113 100 :CHIP
SDA2
SCL2
I2C2
+5V
C2005 4.7 16V F:3216
C2004 4.7 16V F:3216
FL2003 EMI
5V2
C2031 0.22 25V F:CHIP
C2004
400C-70PJN
RAM

A (2/2) BOARD IC VOLTAGE TABLE

IC Voltage Table					
Ref No	**Pin No**	**Voltage (V)**	**Ref No**	**Pin No**	**Voltage (V)**
IC101	1-5	4.6	1101	1	4.8
	7-8	4.6		2	1.1
	10	4.6		4	0.9
	17	4.6		5	0.3
	23	4.6		6-7	2.4
	29	4.6		8	1.4
	31	4.6		9	4.7
	34	4.6		10	1.7
	36	4.6		11	1.5
	38	9.0		16	4.0
	40-47	4.6		18-20	4.7
IC1001	5	2.4		21	2.5
	6	4.8		22	2.3
	19	3.6	2001	2	0.4
	20	0.1		5	0.3
	24	4.8		6-7	1.6
	26	2.1		8	4.0
	27	2.3		10	1.0
	28	4.6		11-12	4.7
	30	0.1		16	4.7
	31-32	2.4		21	4.7
	33	4.8		23	2.9
	36	4.1		25	4.7
	38	0.1		66	4.7
	39	0.6		68	4.7
	40	4.8			
	41	0.1			
	42	4.8			
	43	4.4			
	44	4.1			
	48	4.8			
	49	2.2			
	50	4.8			
	52	4.8			
	54	4.8			

A (2/2) BOARD TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table			
Ref No	**B Base**	**C Collector**	**E Emitter**
Q1001	0.1	0.7	0.1
Q1004	0.1	0.7	-
Q1101	3.3	5.0	2.6

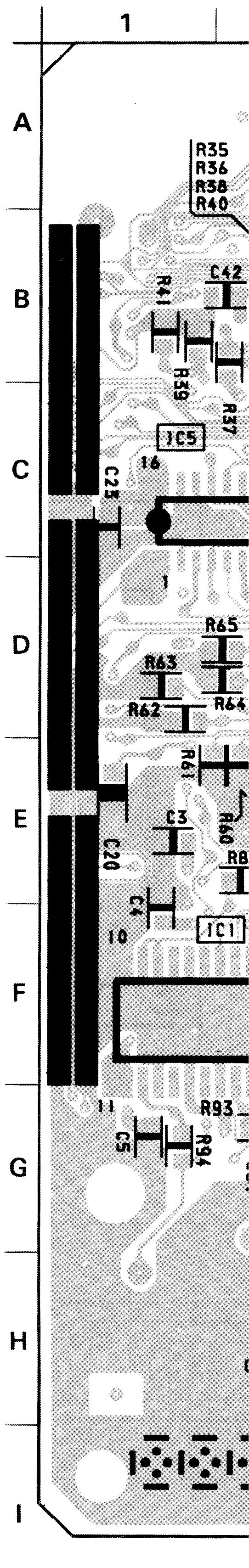
Q BOARD

IC	
IC1	F-2
IC2	F-12
IC3	C-12
IC4	C-3
IC5	C-1
IC6	B-4
IC7	F-7
IC8	H-5
IC9	G-3
IC10	C-5
IC11	C-6
IC12	B-6
TRANSISTOR	
Q1	G-4

Q

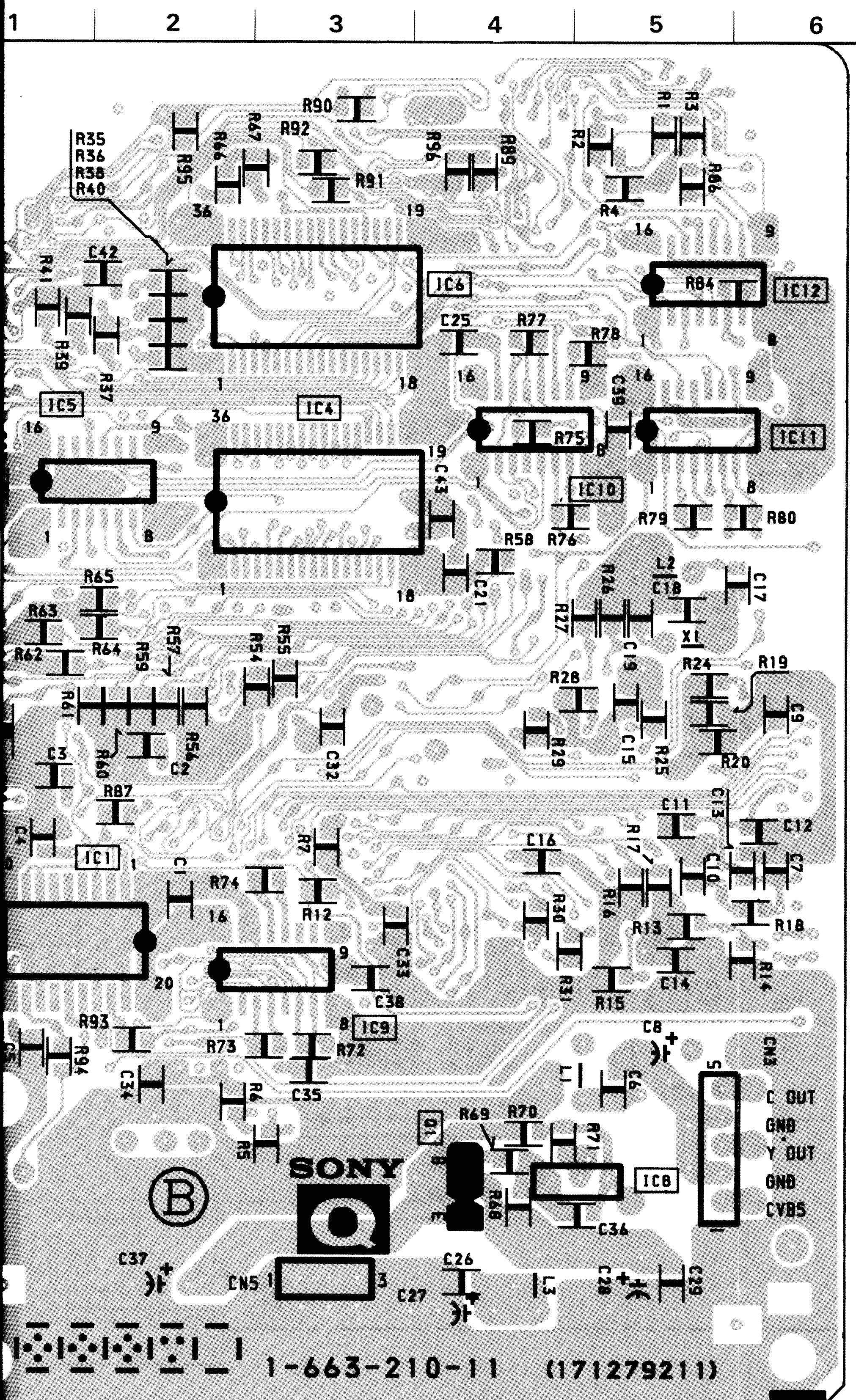
SCANLINE
I^2C BUS IN
PAL PLUS

Q Board < Conduc

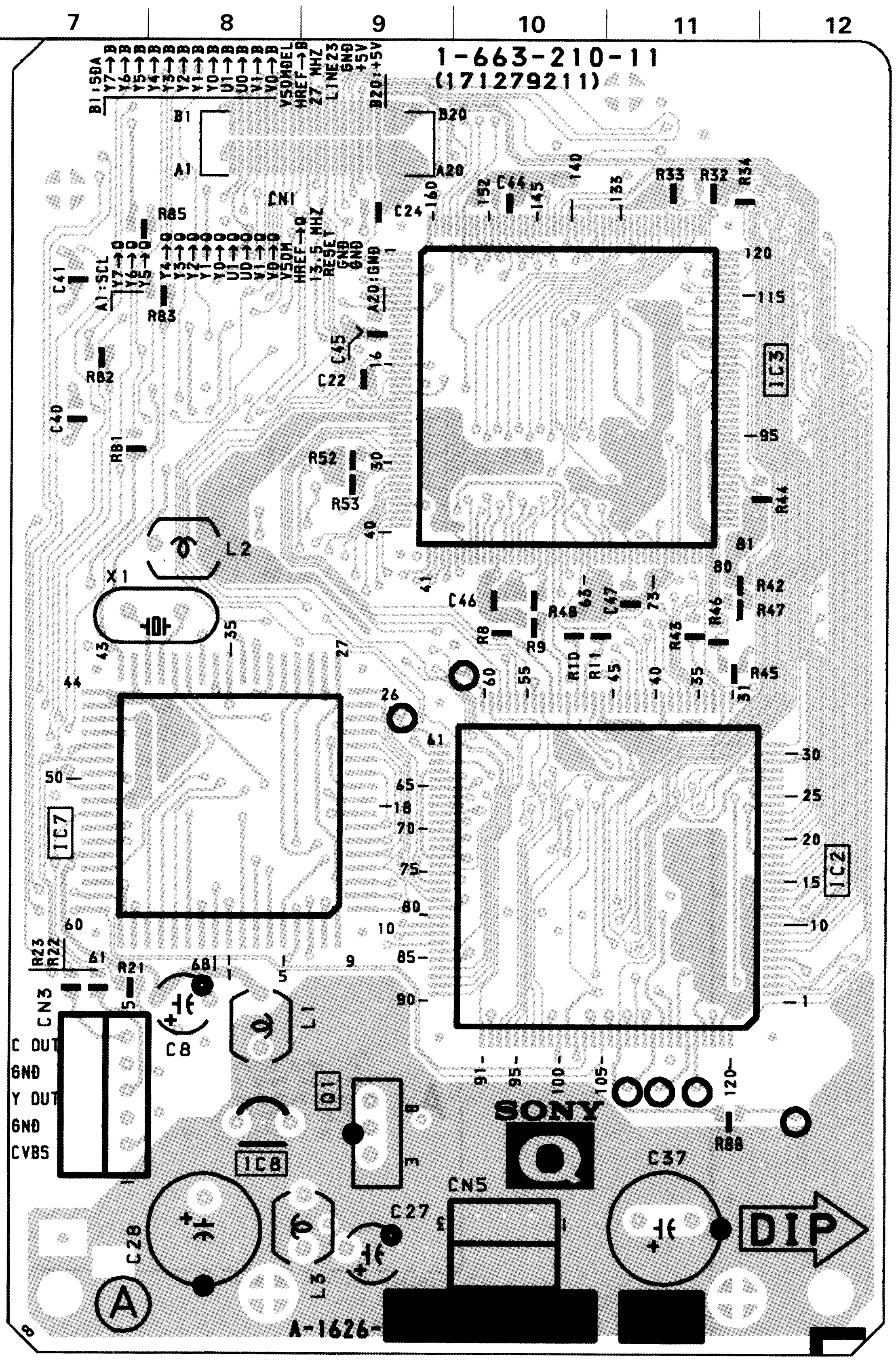

1
A
B
C
D
E
F
G
H
I
R35
R36
R38
R40
C42
R41
R39
R37
IC5
16
C23
1
R65
R63
R62
R64
R61
C3
R60
C20
R8
C4
10
IC1
11
R93
C5
R94

SCANLINE VIDEO PROCESSOR, PAL PLUS PROCESSOR,
I²C BUS INTERFACE, TIMING GENERATOR,
PAL PLUS ENCODER

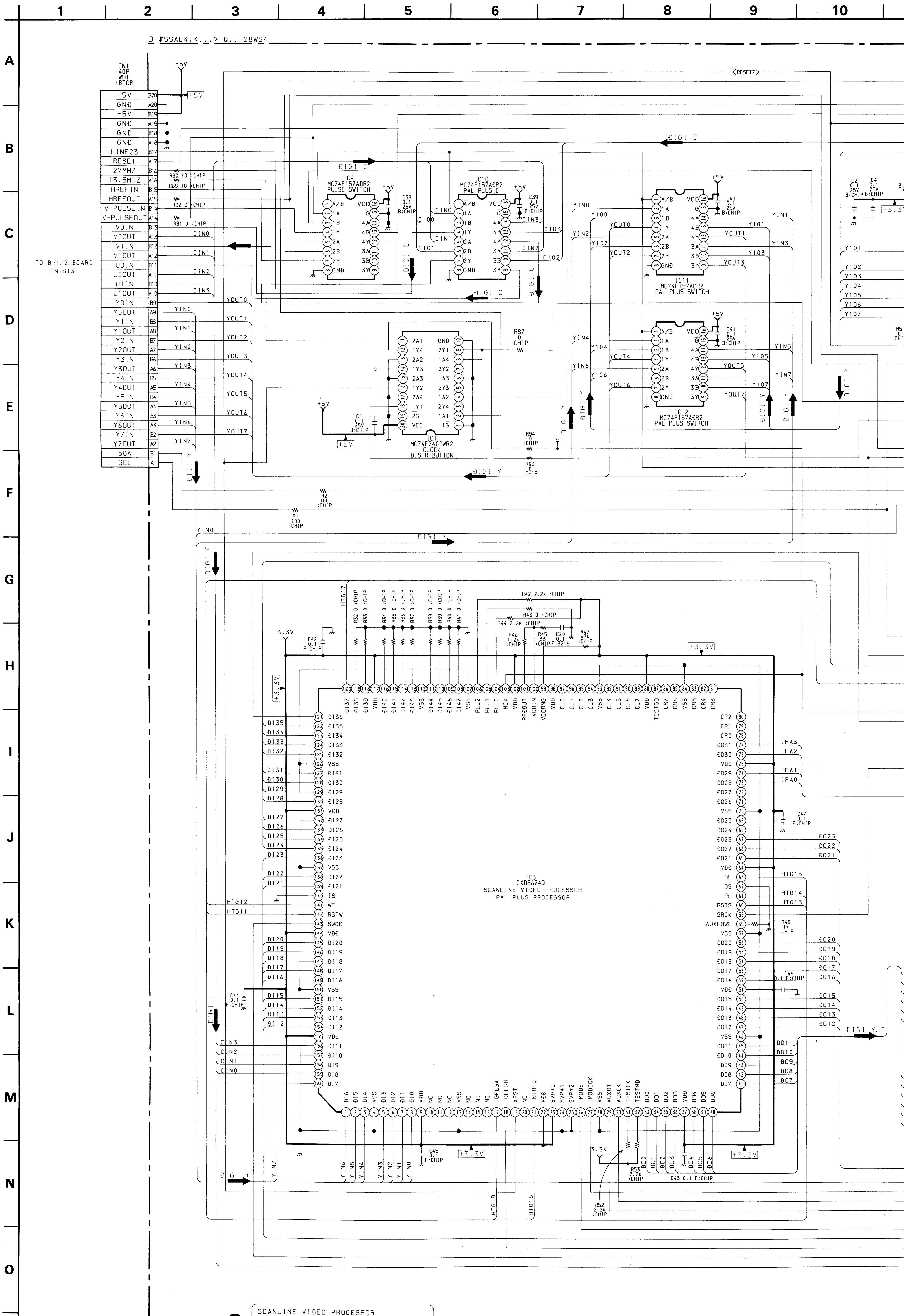
rd < Conductor Side >


1
2
3
4
5
6
IC1
IC4
IC5
IC6
IC8
IC9
IC10
IC11
IC12
Q1
X1
L1
L2
L3
CN3
CN5
C OUT
GND
Y OUT
GND
CVBS
SONY
Q
B
1-663-210-11
(171279211)

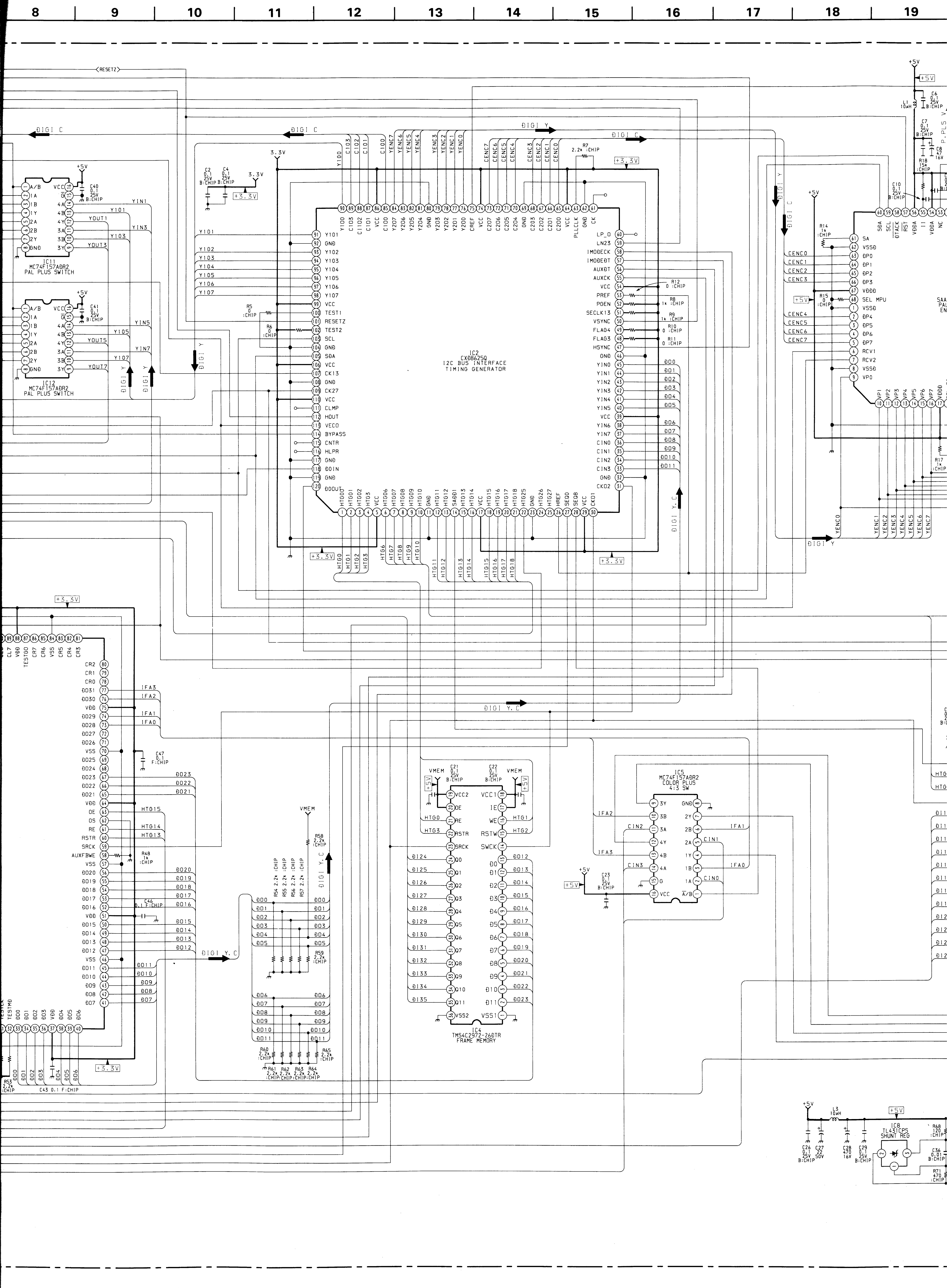
Q Board < Component Side >

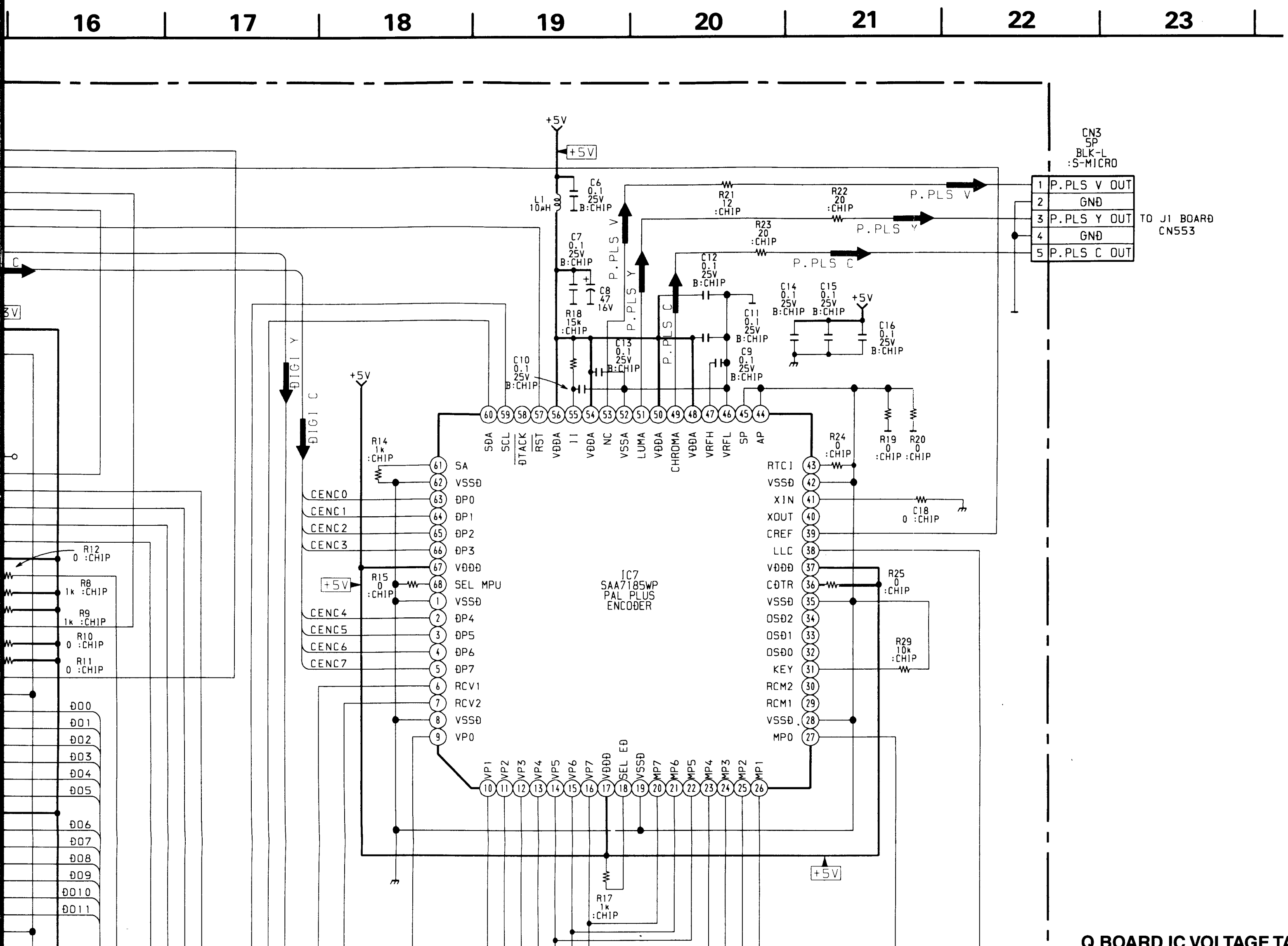

7
8
9
10
11
12
1-663-210-11
(171279211)
CN1
B1
A1
B20
A20
B1:SDA
A1:SCL
B20:+5V
A20:GND
IC2
IC3
IC7
IC8
Q1
X1
L1
L2
L3
CN3
CN5
C OUT
GND
Y OUT
GND
CVBS
SONY
Q
DIP
A
A-1626-

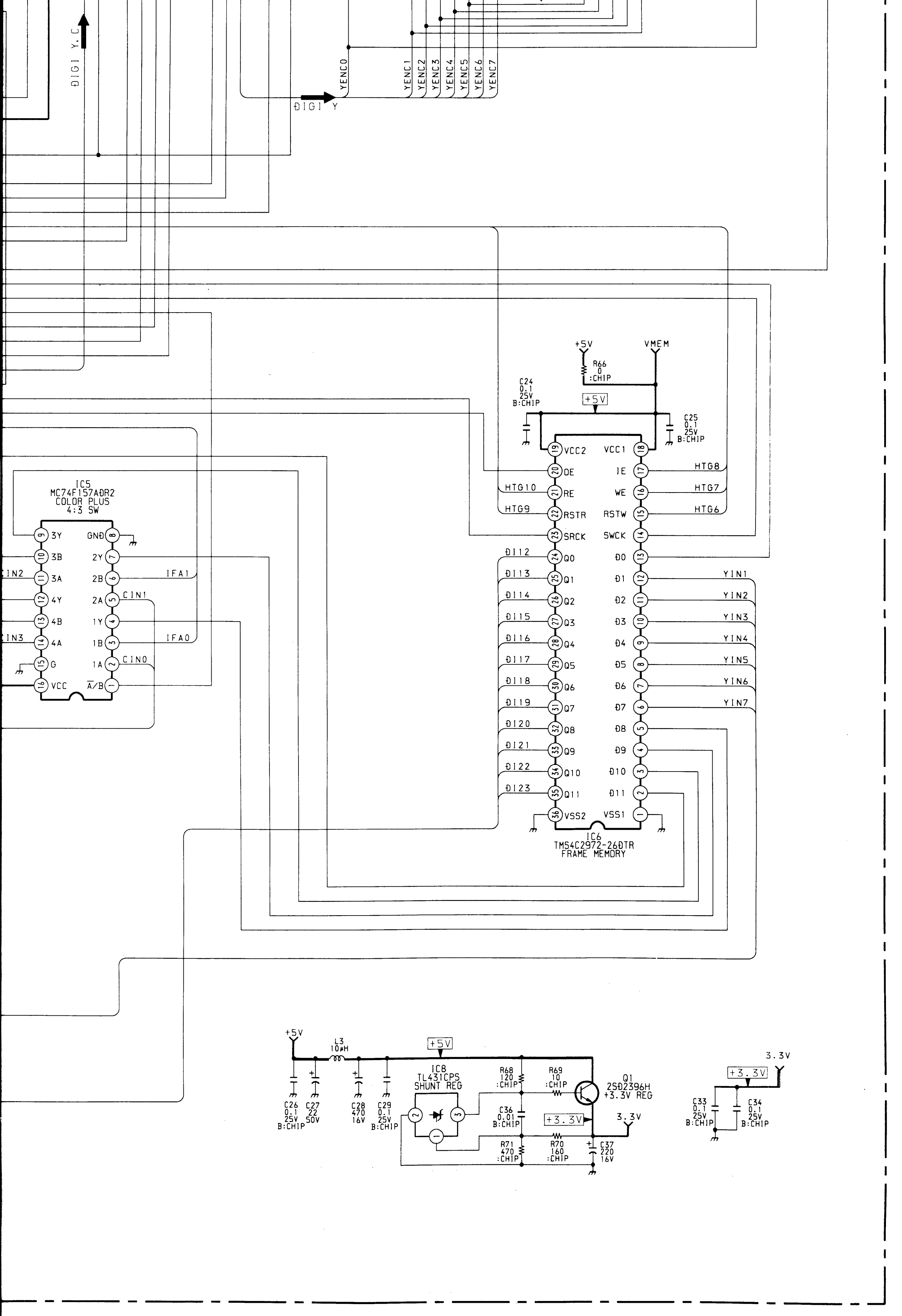
B-#SSAE4.<...>-Q..-28WS4


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CN1 40P WHT :BTOB
+5V
GND
LINE23
RESET
27MHZ
13.5MHZ
HREFIN
HREFOUT
V-PULSEIN
V-PULSEOUT
V0IN
V0OUT
V1IN
V1OUT
U0IN
U0OUT
U1IN
U1OUT
Y0IN
Y0OUT
Y1IN
Y1OUT
Y2IN
Y2OUT
Y3IN
Y3OUT
Y4IN
Y4OUT
Y5IN
Y5OUT
Y6IN
Y6OUT
Y7IN
Y7OUT
SDA
SCL
TO B (1/2) BOARD CN1813
R90 10 :CHIP
R89 10 :CHIP
R92 0 :CHIP
R91 0 :CHIP
IC9 MC74F157ADR2 PULSE SWITCH
IC10 MC74F157ADR2 PAL PLUS C
IC11 MC74F157ADR2 PAL PLUS SWITCH
IC12 MC74F157ADR2 PAL PLUS SWITCH
IC1 MC74F240DWR2 CLOCK DISTRIBUTION
IC3 CXD8624Q SCANLINE VIDEO PROCESSOR PAL PLUS PROCESSOR
C38 0.1 25V B:CHIP
C39 0.1 25V B:CHIP
C40 0.1 25V B:CHIP
C41 0.1 25V B:CHIP
C1 0.1 25V B:CHIP
C2 0.1 25V B:CHIP
C4 0.1 25V B:CHIP
R87 0 :CHIP
R94 0 :CHIP
R93 0 :CHIP
R2 100 :CHIP
R1 100 :CHIP
R42 2.2k :CHIP
R43 0 :CHIP
R44 2.2k :CHIP
R46 1.2k :CHIP
R45 33 :CHIP
C20 0.1 F:3216
R47 47k :CHIP
C42 0.1 F:CHIP
C44 0.1 F:CHIP
C45 0.1 F:CHIP
C46 0.1 F:CHIP
C47 0.1 F:CHIP
C43 0.1 F:CHIP
R48 1k :CHIP
R53 2.2k :CHIP
R52 2.2k :CHIP
R32 0 :CHIP
R33 0 :CHIP
R34 0 :CHIP
R35 0 :CHIP
R36 0 :CHIP
R37 0 :CHIP
R38 0 :CHIP
R39 0 :CHIP
R40 0 :CHIP
R41 0 :CHIP
DIGI C
DIGI Y
DIGI Y, C
RESETZ
+5V
+3.3V
3.3V
CIN0
CIN1
CIN2
CIN3
C100
C101
C102
C103
YIN0
YIN1
YIN2
YIN3
YIN4
YIN5
YIN6
YIN7
YOUT0
YOUT1
YOUT2
YOUT3
YOUT4
YOUT5
YOUT6
YOUT7
Y100
Y101
Y102
Y103
Y104
Y105
Y106
Y107
HTG11
HTG12
HTG13
HTG14
HTG15
HTG16
HTG17
HTG18
IFA0
IFA1
IFA2
IFA3

Q { SCANLINE VIDEO PROCESSOR
PAL PLUS PROCESSOR
I2C BUS INTERFACE, TIMING GENERATOR
PAL PLUS ENCODER }


8
9
10
11
12
13
14
15
16
17
18
19
RESETZ
DIGI C
DIGI Y
DIGI Y.C
+5V
3.3V
+3.3V
IC11
MC74F157ADR2
PAL PLUS SWITCH
IC12
MC74F157ADR2
PAL PLUS SWITCH
YIN1
YIN3
YIN5
YIN7
YOUT1
YOUT3
YOUT5
YOUT7
C40 0.1 25V B:CHIP
C41 0.1 25V B:CHIP
C2 0.1 25V B:CHIP
C4 0.1 25V B:CHIP
R7 2.2k :CHIP
R5 0 :CHIP
R6 0 :CHIP
R8 1k :CHIP
R9 1k :CHIP
R10 0 :CHIP
R11 0 :CHIP
R12 0 :CHIP
IC2
CXD8625Q
I2C BUS INTERFACE
TIMING GENERATOR
L1 10µH
C6 0.1 25V B:CHIP
C7 0.1 25V B:CHIP
C8 47 16V
C10 0.1 25V B:CHIP
R14 1k :CHIP
R15 0 :CHIP
R17 1k :CHIP
R18 15k :CHIP
SA
VSSD
SEL MPU
RCV1
RCV2
VPO
CENC0
CENC1
CENC2
CENC3
CENC4
CENC5
CENC6
CENC7
YENC0
YENC1
YENC2
YENC3
YENC4
YENC5
YENC6
YENC7
C47 0.1 F:CHIP
C46 0.1 F:CHIP
C43 0.1 F:CHIP
R48 1k :CHIP
R53 2.2k :CHIP
IFA0
IFA1
IFA2
IFA3
HTG13
HTG14
HTG15
VMEM
C21 0.1 25V B:CHIP
C22 0.1 25V B:CHIP
R58 2.2k :CHIP
R59 2.2k :CHIP
R54 2.2k :CHIP
R55 2.2k :CHIP
R56 2.2k :CHIP
R57 2.2k :CHIP
R60 2.2k :CHIP
R61 2.2k :CHIP
R62 2.2k :CHIP
R63 2.2k :CHIP
R64 2.2k :CHIP
R65 2.2k :CHIP
IC4
TMS4C2972-26DTR
FRAME MEMORY
IC5
MC74F157ADR2
COLOR PLUS
4:3 SW
CIN0
CIN1
CIN2
CIN3
C23 0.1 25V B:CHIP
L3 10µH
C26 0.1 25V B:CHIP
C27 22 50V
C28 470 16V
C29 0.1 25V B:CHIP
IC8
TL431CPS
SHUNT REG
R68 120 :CHIP
C36 0.01 B:CHIP
R71 470 :CHIP


16
17
18
19
20
21
22
23
CN3
5P
BLK-L
:S-MICRO
P.PLS V OUT
GND
P.PLS Y OUT
GND
P.PLS C OUT
TO J1 BOARD
CN553
P.PLS V
P.PLS Y
P.PLS C
DIGI Y
DIGI C
IC7
SAA7185WP
PAL PLUS
ENCODER
CENC0
CENC1
CENC2
CENC3
CENC4
CENC5
CENC6
CENC7
D00
D01
D02
D03
D04
D05
D06
D07
D08
D09
D010
D011
R12
R8
R9
R10
R11
R14
R15
R17
R18
R19
R20
R21
R22
R23
R24
R25
R29
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C18
L1
10μH
+5V


DIGI Y.C
DIGI Y
YENC0
YENC1
YENC2
YENC3
YENC4
YENC5
YENC6
YENC7
IC5
MC74F157ADR2
COLOR PLUS
4:3 SW
CIN0
CIN1
CIN2
CIN3
IFA0
IFA1
IC6
TMS4C2972-26DTR
FRAME MEMORY
HTG6
HTG7
HTG8
HTG9
HTG10
D112
D113
D114
D115
D116
D117
D118
D119
D120
D121
D122
D123
YIN1
YIN2
YIN3
YIN4
YIN5
YIN6
YIN7
VMEM
R66
C24
C25
IC8
TL431CPS
SHUNT REG
Q1
2SD2396H
+3.3V REG
L3
10μH
R68
R69
R70
R71
C26
C27
C28
C29
C33
C34
C36
C37
+5V
+3.3V
3.3V

Q BOARD IC VOLTAGE TABLE

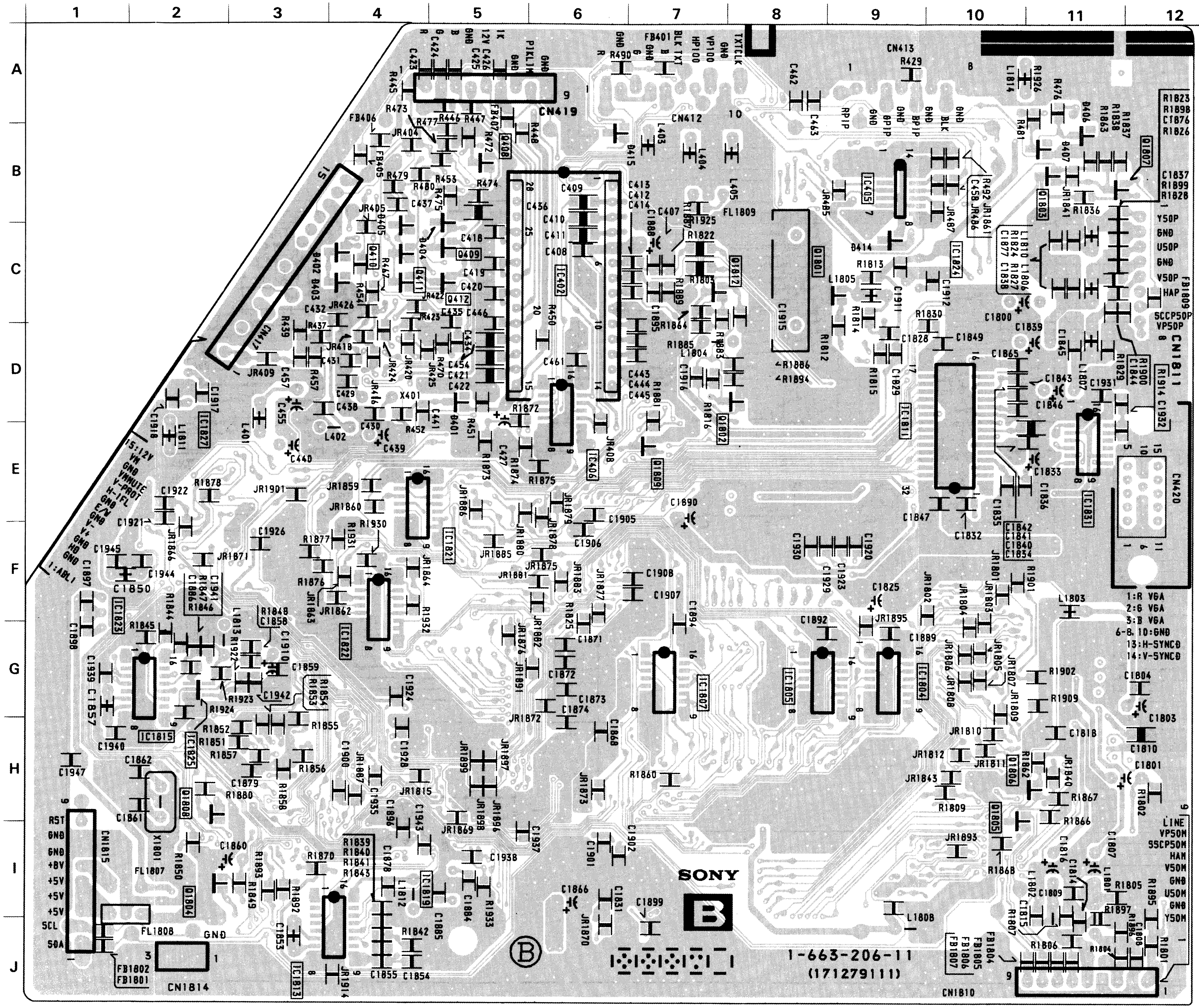
IC Voltage Table								
Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)	Ref No	Pin No	Voltage (V)
IC1	2	1.4	IC7	23	1.7	IC10	1	0.1
	3	4.0		24-27	1.3		2	2.0
	4	0.3		29	0.4		3	1.5
	5	4.0		36-37	4.8		4-5	2.0
	7	4.0		38	1.3		6	1.6
	8-9	1.6		39	1.5		7	2.2
	11-12	1.6		40	4.7		9	2.0
	14	4.0		47	2.0		10	1.5
	16	3.8		48	4.7		11-12	2.0
	18	1.5		49	0.6		13	1.5
	20	4.8		50	4.7		14	2.5
IC5	1	0.1		51	1.0		16	4.8
	2	1.2		53	1.0	IC11	1	0.1
	3	0.1		54	4.7		2	1.9
	4	4.0		55	1.0		3	1.4
	5	2.0		56	4.7		4-5	1.9
	6	0.1		57	3.7		6	1.4
	7	2.1		63-64	1.3		7	2.0
	9	2.0	IC9	1	0.1		9	2.1
	10	0.1		2	0.4		10	1.5
	11	2.0		3	1.0		11-12	2.0
	12	2.0		4	0.2		13	1.4
	13	0.1		5	3.8		14	2.0
	14	2.3		6	2.7		16	4.8
	16	4.8		7	3.0	IC12	1	0.1
IC7	2-5	0.4		9	4.3		2	1.6
	6	0.1		10	1.1		3	2.0
	7	0.5		11	2.1		4	1.7
	9-11	1.2		12-13	0.1		5	2.1
	12	1.3		16	4.8		6	1.4
	14-15	1.4					7	1.7
	16	0.7					9-11	0.9
	17-18	0.5					12-13	1.0
	20	0.8					14	1.2
	21-22	1.4					16	4.8

B BOARD

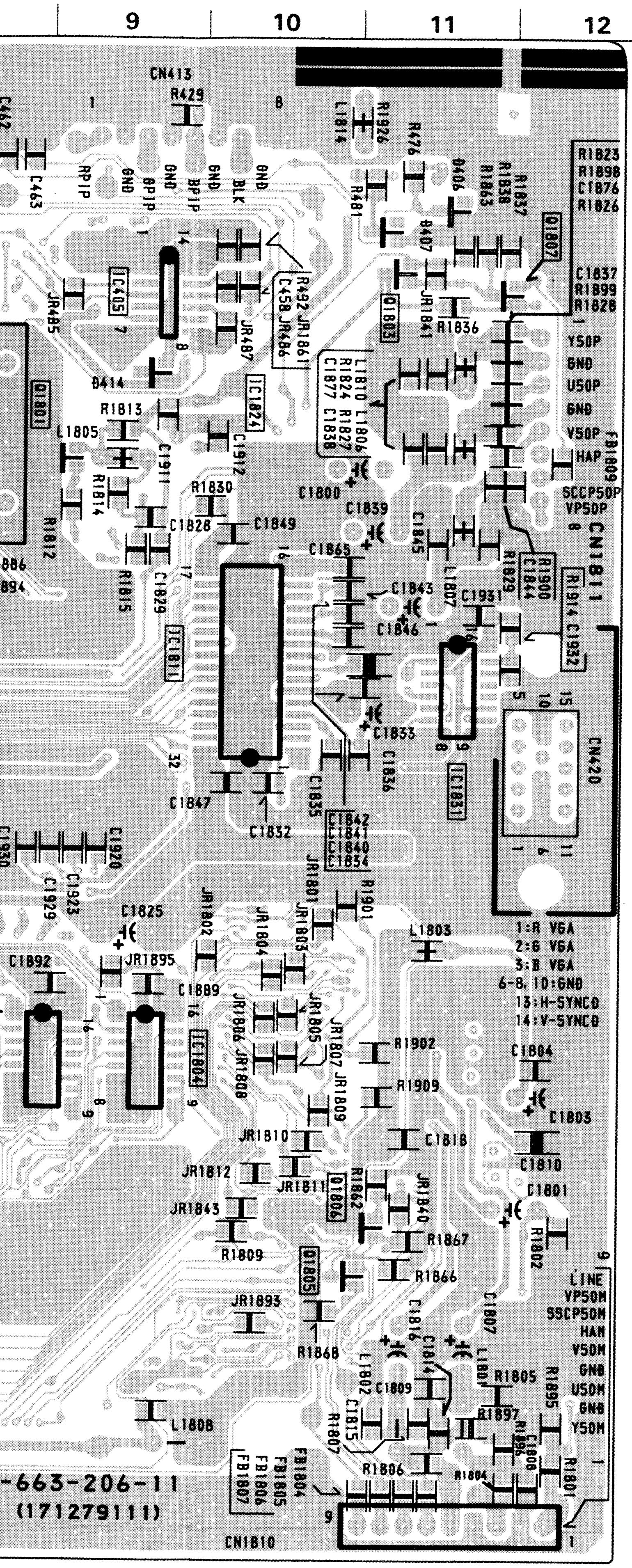
IC		TRANSISTOR	
IC402	C-6	Q411	C-4
IC403	D-20	Q412	C-5
IC405	B-9	Q415	A-19
IC406	E-6	Q416	B-20
IC1801	G-13	Q1801	C-8
IC1803	I-17	Q1802	D-8
IC1804	G-9	Q1804	I-2
IC1805	G-8	Q1805	H-10
IC1806	G-18	Q1807	B-12
IC1807	G-7	Q1808	H-2
IC1808	H-19	Q1809	E-7
IC1809	E-15	Q1810	I-23
IC1810	I-21	Q1812	C-8
IC1811	D-9	Q1813	F-20
IC1812	F-24	DIODE	
IC1813	J-3	D401	D-5
IC1814	F-21	D402	C-3
IC1815	H-2	D403	C-3
IC1816	H-22	D410	B-20
IC1817	E-19	D411	A-21
IC1819	I-5	D412	A-20
IC1821	F-5	D414	C-9
IC1822	G-4	D415	B-7
IC1823	F-1		
IC1824	C-10		
IC1825	H-2		
IC1831	E-11		

B | A/D, D/A CONVERTER, DIGITAL NOISE REDUCER, CRT DRIVER, DEFLECTION PROCESSOR

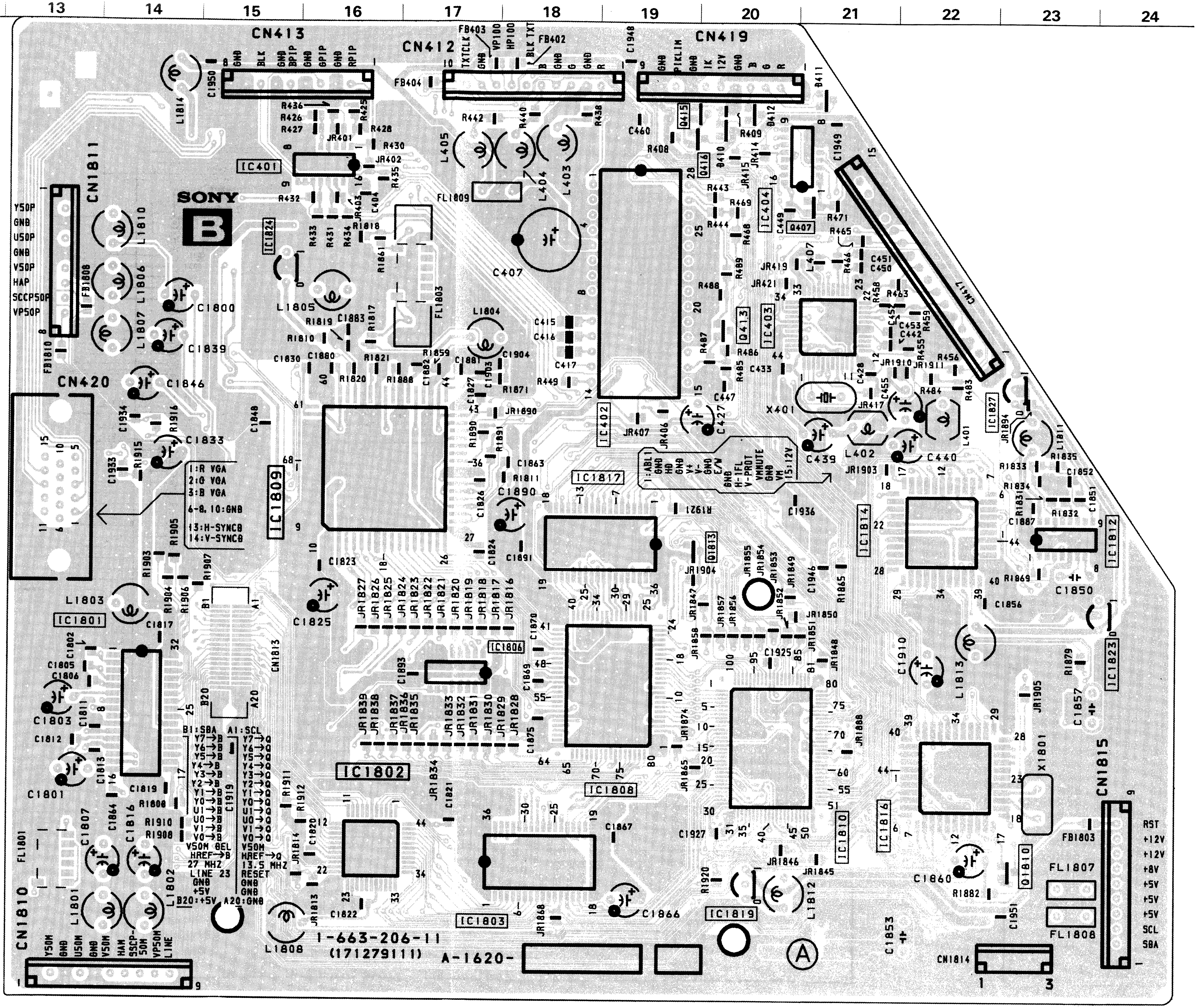
B Board < Conductor Side >

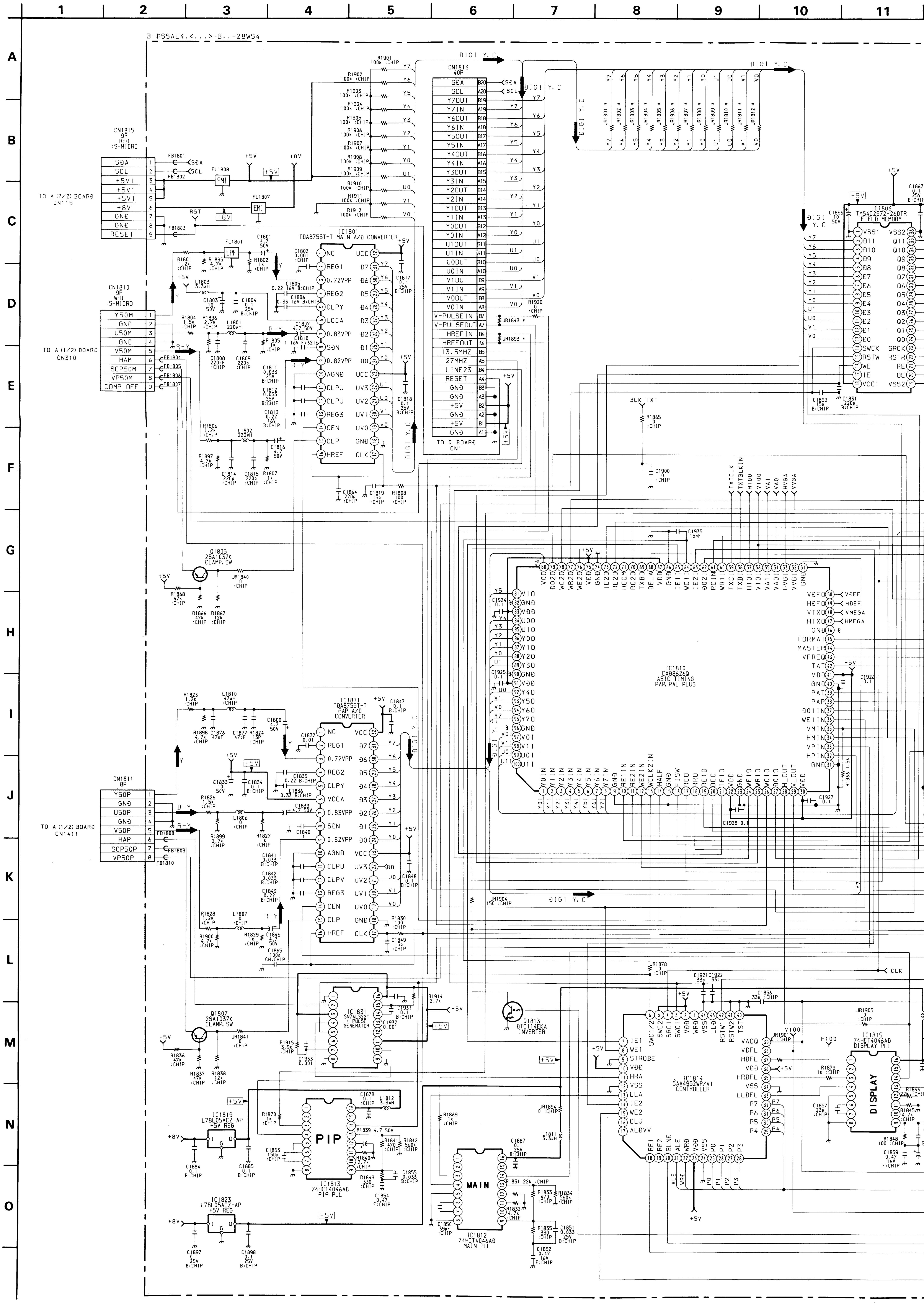


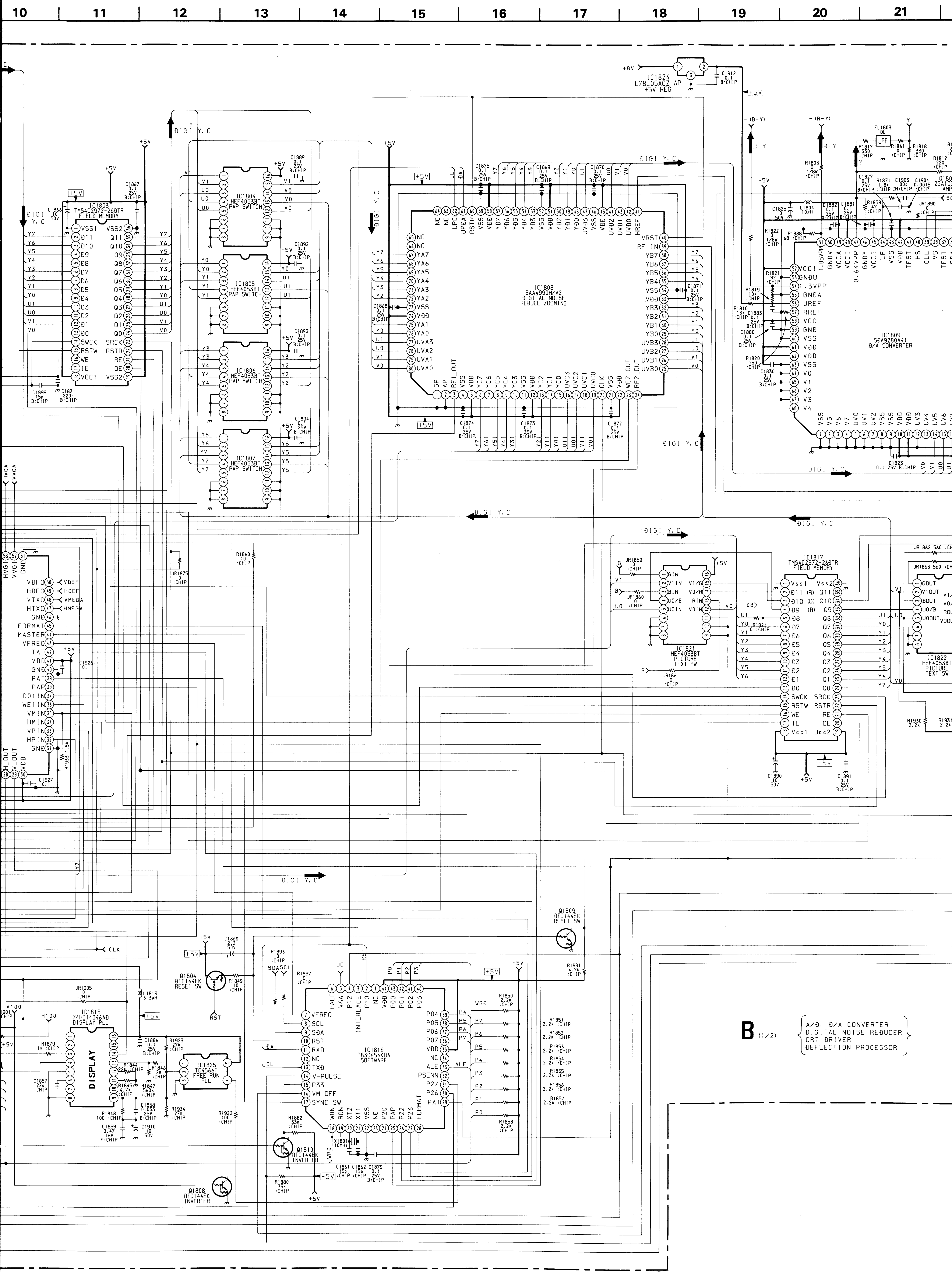
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
CN419
CN412
CN413
CN417
CN1811
CN420
CN1815
CN1814
CN1810
IC402
IC405
IC406
IC1801
IC1804
IC1805
IC1807
IC1811
IC1815
IC1821
IC1822
IC1823
IC1825
IC1831
1:R VGA
2:G VGA
3:B VGA
6-8, 10:GND
13:H-SYNC
14:V-SYNC
15:12V
RST
GND
GND
+8V
+5V
+5V
+5V
SCL
SDA
LINE
VP50M
SSCP50M
HAM
V50M
GND
U50M
GND
Y50M
Y50P
GND
U50P
GND
V50P
HAP
SSCP50P
VP50P
SONY
B
1-663-206-11
(171279111)


9
10
11
12
CN413
CN1811
CN420
CN1810
1:R VGA
2:G VGA
3:B VGA
6-8, 10:GND
13:H-SYNCD
14:V-SYNCD
Y50P
GND
U50P
GND
V50P
HAP
SCCP50P
VP50P
LINE
VP50M
SSCP50M
HAM
V50M
GND
U50M
GND
Y50M
IC405
IC1824
IC1811
IC1831
IC1804
1-663-206-11
(171279111)

B Board < Component Side >

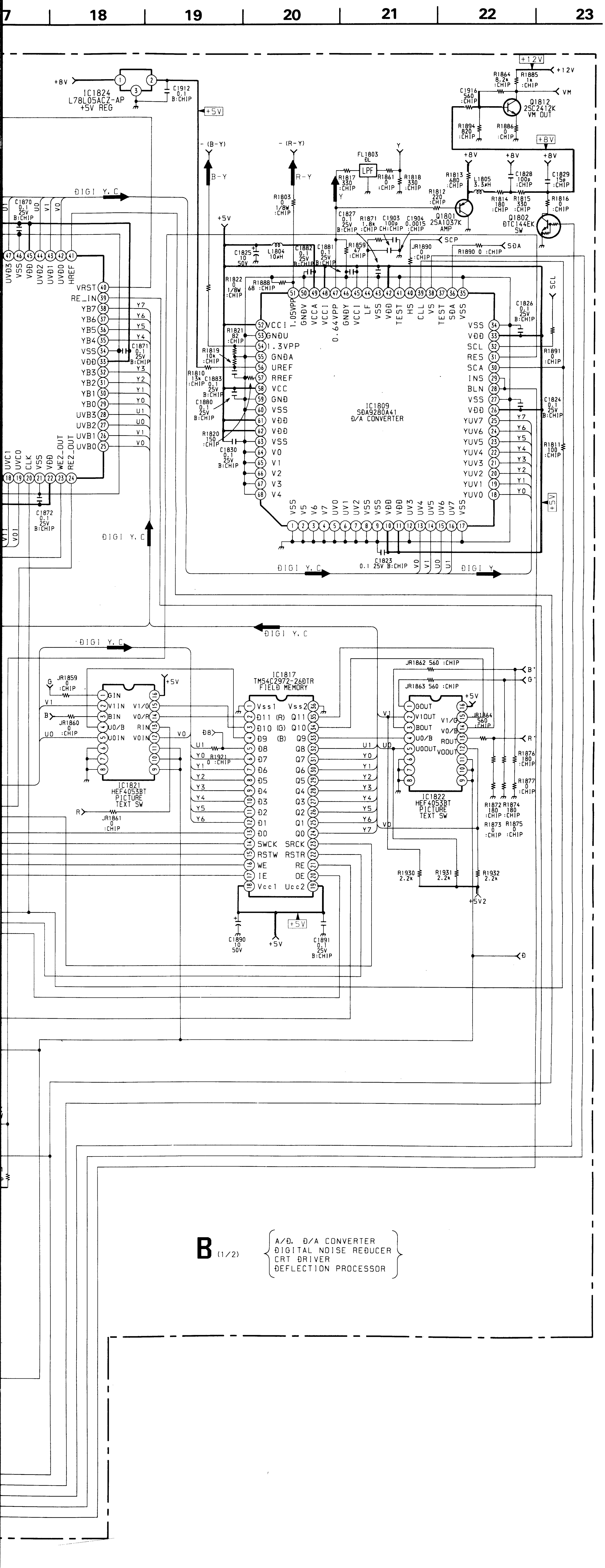

13
14
15
16
17
18
19
20
21
22
23
24
SONY
B
CN413
GND
BLK
GND
BPIP
GND
GPIP
GND
RPIP
CN412
TXTCLK
GND
VP100
HP100
BLK TXT
B
GND
G
GND
R
CN419
GND
PIKLIM
GND
IK
12V
GND
B
G
R
CN1811
Y50P
GND
U50P
GND
V50P
HAP
SCCP50P
VP50P
CN420
1:R VGA
2:G VGA
3:B VGA
6-8, 10:GND
13:H-SYNCD
14:V-SYNCD
IC401
IC402
IC403
IC404
IC1809
IC1801
IC1802
IC1803
IC1806
IC1808
IC1810
IC1812
IC1814
IC1816
IC1817
IC1819
IC1823
IC1824
IC1827
C407
X401
X1801
1:ABL1
GND
HD
GND
V+
V-
GND
E/W
GND
H-IFL
V-PROT
VMMUTE
GND
VM
15:12V
B1:SBA
Y7→B
Y6→B
Y5→B
Y4→B
Y3→B
Y2→B
Y1→B
Y0→B
U1→B
U0→B
V1→B
V0→B
V50M GEL
HREF→B
27 MHZ
LINE 23
GND
+5V
A1:SCL
Y7→Q
Y6→Q
Y5→Q
Y4→Q
Y3→Q
Y2→Q
Y1→Q
Y0→Q
U1→Q
U0→Q
V1→Q
V0→Q
V50M
HREF→Q
13.5 MHZ
RESET
GND
GND
B20:+5V
A20:GND
CN1810
Y50M
GND
U50M
GND
V50M
HAM
SSCP-50M
VP50M
LINE
CN1815
RST
+12V
+12V
+8V
+5V
+5V
+5V
SCL
SDA
CN1814
FL1807
FL1808
1-663-206-11
(171279111)
A-1620-
Ⓐ

B-#SSAE4.<...>-B..-2BWS4
CN1815 9P RED :S-MICRO
SDA
SCL
+5V1
+8V
GND
RESET
TO A (2/2) BOARD CN115
CN1810 9P WHT :S-MICRO
Y50M
U50M
V50M
HAM
SCP50M
VP50M
COMP OFF
TO A (1/2) BOARD CN310
CN1811 8P
Y50P
U50P
V50P
HAP
SCP50P
VP50P
TO A (1/2) BOARD CN1411
IC1801 TDA8755T-T MAIN A/D CONVERTER
IC1811 TDA8755T-T PAP A/D CONVERTER
CN1813 40P
TO Q BOARD CN1
IC1803 TMS4C2972-260TR FIELD MEMORY
IC1810 CXD8626Q ASIC TIMING PAP, PAL PLUS
IC1814 SAA4952WP/V1 CONTROLLER
IC1815 74HCT4046AD DISPLAY PLL
IC1831 SN74LS221 H PULSE GENERATOR
IC1813 74HCT4046AD PIP PLL
IC1812 74HCT4046AD MAIN PLL
IC1819 L78L05ACZ-AP +5V REG
IC1823 L78L05ACZ-AP +5V REG
Q1805 2SA1037K CLAMP. SW
Q1807 2SA1037K CLAMP. SW
Q1813 DTC114EKA INVERTER
DIGI Y. C
PIP
MAIN
DISPLAY
BLK TXT
CLK


10
11
12
13
14
15
16
17
18
19
20
21
IC1803
TMS4C2972-26DTR
FIELD MEMORY
IC1804
HEF4053BT
PAP SWITCH
IC1805
HEF4053BT
PAP SWITCH
IC1806
HEF4053BT
PAP SWITCH
IC1807
HEF4053BT
PAP SWITCH
IC1808
SAA4990H/V2
DIGITAL NOISE
REDUCE ZOOMING
IC1824
L78L05ACZ-AP
+5V REG
IC1809
SDA9280A41
D/A CONVERTER
IC1817
TMS4C2972-26DTR
FIELD MEMORY
IC1821
HEF4053BT
PICTURE
TEXT SW
IC1822
HEF4053BT
PICTURE
TEXT SW
IC1815
74HCT4046AD
DISPLAY PLL
DISPLAY
IC1825
TC4S66F
FREE RUN
PLL
IC1816
P83C654KBA
SOFTWARE
Q1804
DTC144EK
RESET SW
Q1809
DTC144EK
RESET SW
Q1810
DTC144EK
INVERTER
Q1808
DTC144EK
INVERTER
DIGI Y.C
+5V
+8V
CLK
RST
FL1803
LPF
X1801
10MHz

B (1/2)

A/D, D/A CONVERTER
DIGITAL NOISE REDUCER
CRT DRIVER
DEFLECTION PROCESSOR


7
18
19
20
21
22
23
+8V
IC1824
L78L05ACZ-AP
+5V REG
C1912
0.1
B:CHIP
+5V
+12V
R1864
8.2k
:CHIP
R1885
1k
:CHIP
C1916
560
:CHIP
Q1812
2SC2412K
VM OUT
VM
R1894
820
:CHIP
R1886
0
:CHIP
+8V
-(B-Y)
-(R-Y)
B-Y
R-Y
FL1803
DL
LPF
R1817
330
:CHIP
R1861
0
:CHIP
R1818
330
:CHIP
R1813
680
:CHIP
L1805
3.3μH
R1812
220
:CHIP
R1814
180
:CHIP
R1815
330
:CHIP
C1828
100p
:CHIP
C1829
15p
:CHIP
R1816
0
:CHIP
Q1801
2SA1037K
AMP
Q1802
DTC144EK
SW
DIGI Y, C
R1803
0
1/8W
:CHIP
+5V
C1825
10
50V
L1804
10μH
C1882
0.1
25V
B:CHIP
C1881
0.1
25V
B:CHIP
R1859
47
:CHIP
C1827
0.1
25V
B:CHIP
R1871
1.8k
:CHIP
C1903
100p
CH:CHIP
C1904
0.0015
:CHIP
JR1890
0
:CHIP
SCP
SDA
R1890 0 :CHIP
SCL
R1822
0
1/8W
:CHIP
R1888
68 :CHIP
IC1809
SDA9280A41
D/A CONVERTER
C1826
0.1
25V
B:CHIP
R1891
0
:CHIP
C1824
0.1
25V
B:CHIP
R1811
100
:CHIP
R1821
82
:CHIP
R1819
10k
:CHIP
R1810
13k
:CHIP
C1883
0.1
25V
B:CHIP
C1880
0.1
25V
B:CHIP
R1820
150
:CHIP
C1830
0.1
25V
B:CHIP
C1823
0.1 25V B:CHIP
C1870
0.1
25V
B:CHIP
C1871
0.1
25V
B:CHIP
C1872
0.1
25V
B:CHIP
VRST
RE_IN
YB7
YB6
YB5
YB4
VSS
VDD
YB3
YB2
YB1
YB0
UVB3
UVB2
UVB1
UVB0
UVC1
UVC0
CLK
VSS
VDD
WE2_OUT
RE2_OUT
UVB3
VSS
VDD
UVD2
UVD1
UVD0
HREF
DIGI Y
IC1817
TMS4C2972-26DTR
FIELD MEMORY
IC1821
HEF4053BT
PICTURE
TEXT SW
IC1822
HEF4053BT
PICTURE
TEXT SW
JR1859
0
:CHIP
JR1860
0
:CHIP
JR1861
0
:CHIP
JR1862 560 :CHIP
JR1863 560 :CHIP
JR1864
560
:CHIP
R1921
0 :CHIP
R1876
180
:CHIP
R1877
0
:CHIP
R1872
180
:CHIP
R1874
180
:CHIP
R1873
0
:CHIP
R1875
0
:CHIP
R1930
2.2k
R1931
2.2k
R1932
2.2k
+5V2
C1890
10
50V
C1891
0.1
25V
B:CHIP
B (1/2)
A/D, D/A CONVERTER
DIGITAL NOISE REDUCER
CRT DRIVER
DEFLECTION PROCESSOR

B BOARD * MARK

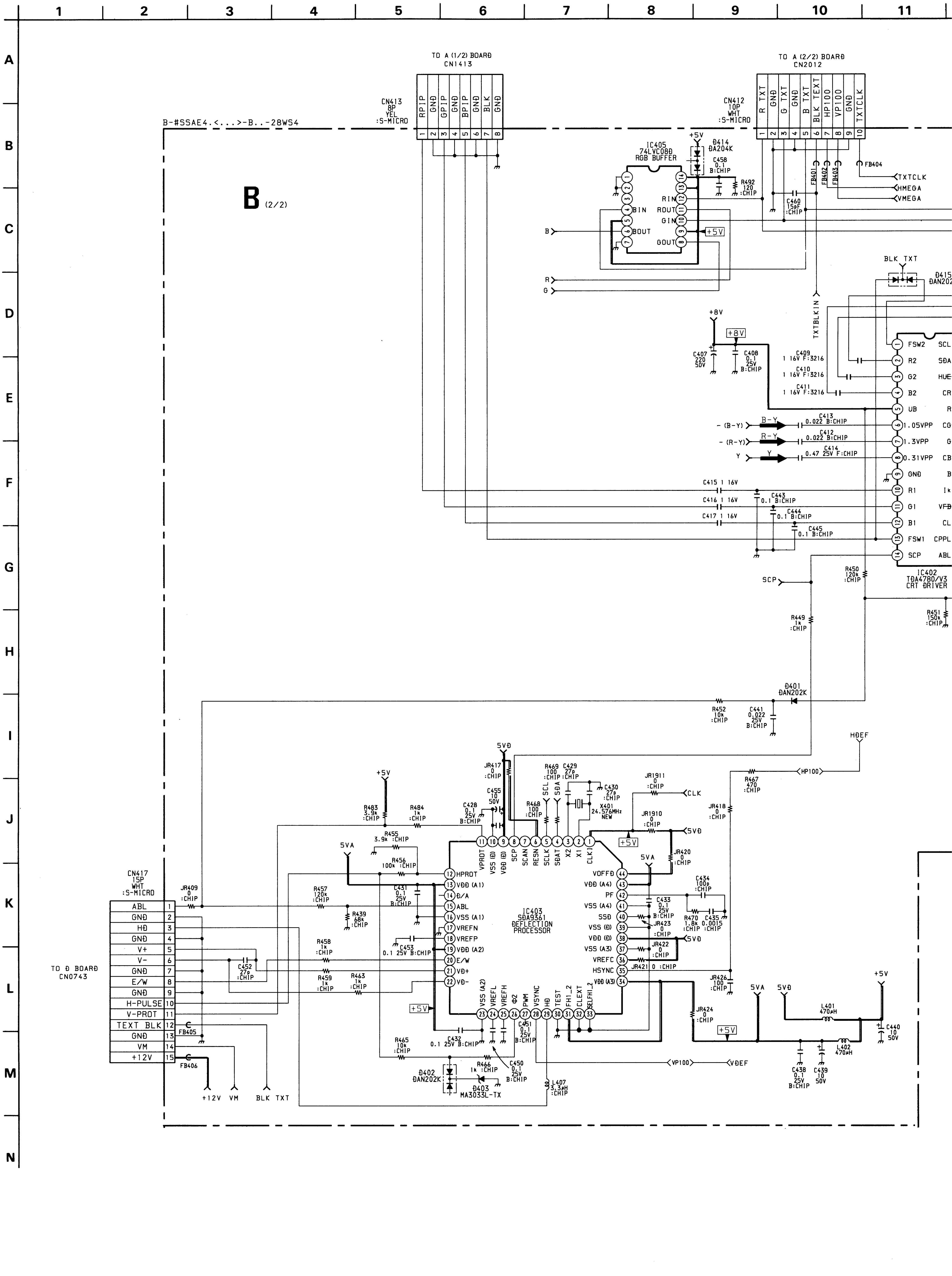
Model / Ref. No.	28WS4A	28WS4B	28WS4D	28WS4E	28WS4K	28WS4R
JR1801	—	0:CHIP	—	—	—	—
JR1802	—	0:CHIP	—	—	—	—
JR1803	—	0:CHIP	—	—	—	—
JR1804	—	0:CHIP	—	—	—	—
JR1805	—	0:CHIP	—	—	—	—
JR1806	—	0:CHIP	—	—	—	—
JR1807	—	0:CHIP	—	—	—	—
JR1808	—	0:CHIP	—	—	—	—
JR1809	—	0:CHIP	—	—	—	—
JR1810	—	0:CHIP	—	—	—	—
JR1811	—	0:CHIP	—	—	—	—
JR1812	—	0:CHIP	—	—	—	—
JR1843	—	0:CHIP	—	—	—	—
JR1893	0:CHIP	—	0:CHIP	0:CHIP	0:CHIP	0:CHIP

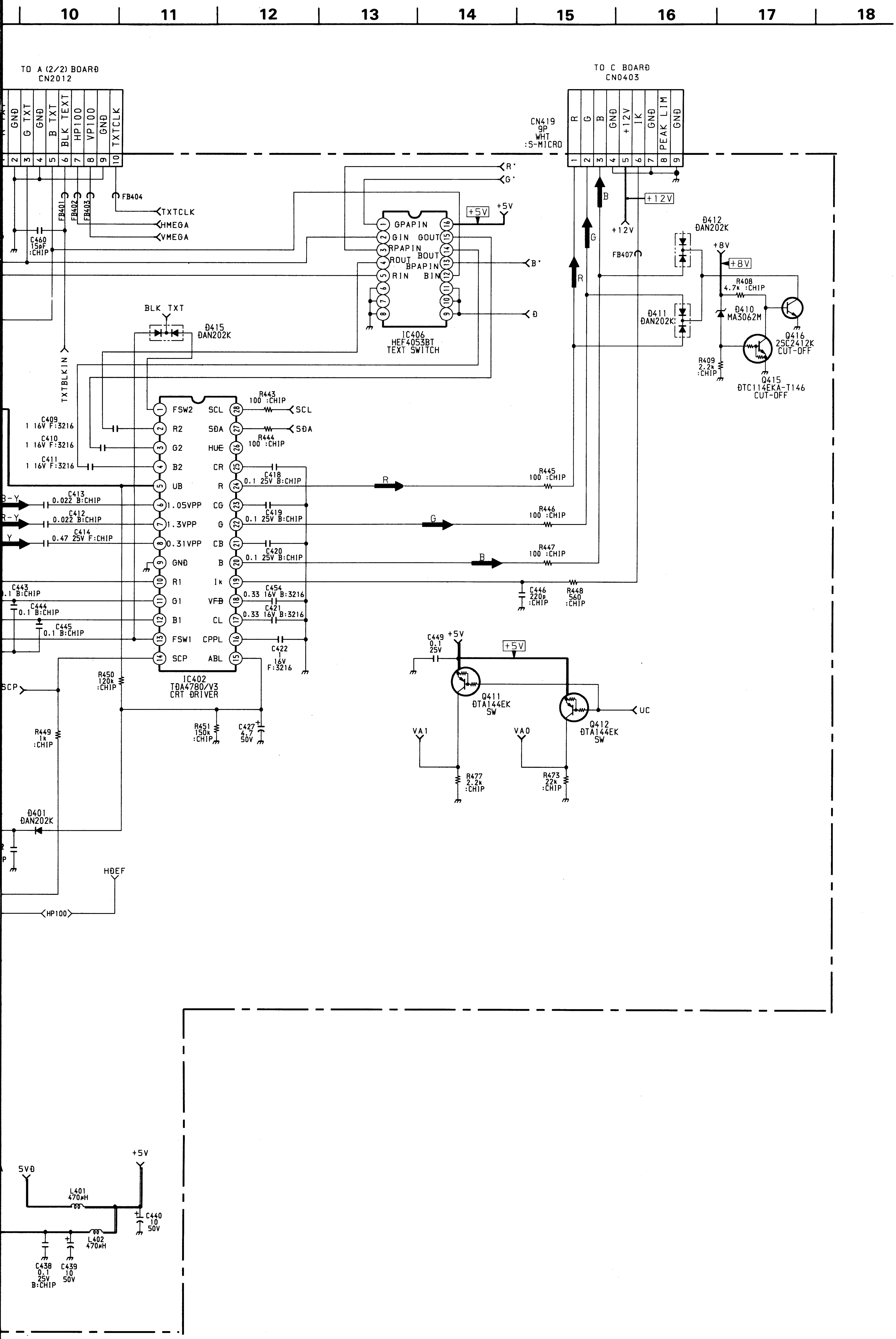
B (1/2) BOARD
IC VOLTAGE TABLE

IC Voltage Table		
Ref No	Pin No	Voltage (V)
IC1812	3-4	2.4
	6-7	0.7
	9	4.6
	11-13	4.7
	14	0.3
	16	5.0
IC1813	3-4	2.4
	6-7	0.7
	9	4.6
	11-13	4.7
	14	0.3
	16	5.0
IC1815	1	5.0
	2	2.3
	3-4	2.5
	6-7	0.8
	9-11	3.0
	12	4.5
	13	3.0
	14	0.4
	15	0.2
	16	5.2
IC1821	2	2.5
	4-5	2.3
	12	2.0
	14	2.0
	15	2.6
	16	8.0
IC1822	2	2.9
	4-5	2.6
	12	2.3
	14	2.1
	15	2.8
	16	8.0

B BOARD
TRANSISTOR VOLTAGE TABLE

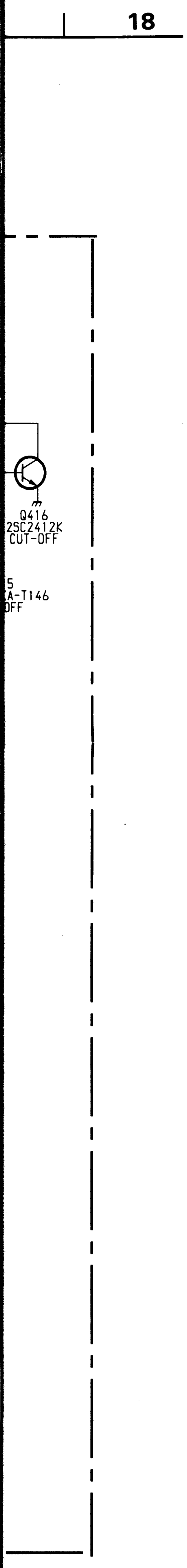
Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q411	0.1	4.8	4.8
Q412	0.1	4.8	4.8
Q415	1.8	0.1	-
Q416	0.1	5.6	-
Q1801	0.1	-	0.9
Q1802	4.0	0.1	0.1
Q1804	0.3	4.8	0.1
Q1805	2.5	1.3	0.7
Q1807	2.5	1.3	0.7
Q1808	0.1	4.7	0.1
Q1809	0.1	0.1	0.1
Q1810	0.1	4.8	-
Q1812	0.5	10.5	-
Q1813	0.1	3.7	0.1


B (2/2)
B-#SSAE4.<...>-B..-28WS4
TO A (1/2) BOARD CN1413
CN413 8P YEL :S-MICRO
RPIP
GND
GPIP
GND
BPIP
GND
BLK
GND
TO A (2/2) BOARD CN2012
CN412 10P WHT :S-MICRO
R TXT
GND
G TXT
GND
B TXT
BLK TEXT
HP100
VP100
GND
TXTCLK
IC405 74LVC08D RGB BUFFER
D414 DA204K
C458 0.1 B:CHIP
R492 120 :CHIP
C460 15pF :CHIP
FB401
FB402
FB403
FB404
TXTCLK
HMEGA
VMEGA
BIN
BOUT
RIN
ROUT
GIN
GOUT
+5V
B
R
G
BLK TXT
D415 DAN202K
TXTBLKIN
+8V
C407 220 50V
C408 0.1 25V B:CHIP
C409 1 16V F:3216
C410 1 16V F:3216
C411 1 16V F:3216
C413 0.022 B:CHIP
C412 0.022 B:CHIP
C414 0.47 25V F:CHIP
-(B-Y)
-(R-Y)
Y
B-Y
R-Y
C415 1 16V
C416 1 16V
C417 1 16V
C443 0.1 B:CHIP
C444 0.1 B:CHIP
C445 0.1 B:CHIP
FSW2
R2
G2
B2
UB
1.05VPP
1.3VPP
0.31VPP
GND
R1
G1
B1
FSW1
SCP
SCL
SDA
HUE
CR
CG
CB
VFB
CL
CPPL
ABL
IC402 TDA4780/V3 CRT DRIVER
R450 120k :CHIP
R451 150k :CHIP
R449 1k :CHIP
SCP
D401 DAN202K
R452 10k :CHIP
C441 0.022 25V B:CHIP
HDEF
5VD
JR417 0 :CHIP
R469 100 :CHIP
C429 27p :CHIP
C430 27p :CHIP
X401 24.576MHz NEW
C455 10 50V
R468 100 :CHIP
JR1911 0 :CHIP
CLK
R467 470 :CHIP
HP100
JR418 0 :CHIP
JR1910 0 :CHIP
5VD
+5V
R483 3.9k :CHIP
R484 1k :CHIP
C428 0.1 25V B:CHIP
R455 3.9k :CHIP
R456 100k :CHIP
5VA
JR420 0 :CHIP
C434 100p :CHIP
C433 0.1 25V B:CHIP
R470 1.8k :CHIP
C435 0.0015 :CHIP
JR423 0 :CHIP
JR422 0 :CHIP
JR421 0 :CHIP
JR426 100 :CHIP
IC403 SDA9361 DEFLECTION PROCESSOR
VPROT
VSS (D)
VDD (D)
SCP
SCAN
RESN
SCLK
SDAT
X2
X1
CLKI
HPROT
VDD (A1)
D/A
ABL
VSS (A1)
VREFN
VREFP
VDD (A2)
E/W
VD+
VD-
VOFFD
VDD (A4)
PF
VSS (A4)
SSD
VSS (D)
VDD (D)
VSS (A3)
VREFC
HSYNC
VDD (A3)
VSS (A2)
VREFL
VREFH
Φ2
PWM
VSYNC
HD
TEST
FH1_2
CLEXT
SELFH1_2
CN417 15P WHT :S-MICRO
JR409 0 :CHIP
R457 120k :CHIP
C431 0.1 25V B:CHIP
R439 68k :CHIP
R458 1k :CHIP
C453 0.1 25V B:CHIP
C452 27p :CHIP
R459 1k :CHIP
R463 1k :CHIP
1 ABL
2 GND
3 HD
4 GND
5 V+
6 V-
7 GND
8 E/W
9 GND
10 H-PULSE
11 V-PROT
12 TEXT BLK
13 GND
14 VM
15 +12V
TO D BOARD CN0743
FB405
FB406
+12V
VM
BLK TXT
+5V
C432 0.1 25V B:CHIP
C451 0.1 25V B:CHIP
R465 10k :CHIP
R466 1k :CHIP
C450 0.1 25V B:CHIP
D402 DAN202K
D403 MA3033L-TX
L407 3.3μH :CHIP
VP100
VDEF
JR424 0 :CHIP
5VA
5VD
+5V
L401 470μH
L402 470μH
C440 10 50V
C438 0.1 25V B:CHIP
C439 10 50V
1 2 3 4 5 6 7 8 9 10 11
A B C D E F G H I J K L M N


10
11
12
13
14
15
16
17
18
TO A (2/2) BOARD
CN2012
TO C BOARD
CN0403
CN419
9P
WHT
:S-MICRO
IC406
HEF4053BT
TEXT SWITCH
IC402
TDA4780/V3
CRT DRIVER
D415
DAN202K
D412
DAN202K
D411
DAN202K
D410
MA3062M
Q416
2SC2412K
CUT-OFF
Q415
DTC114EKA-T146
CUT-OFF
Q411
DTA144EK
SW
Q412
DTA144EK
SW
D401
DAN202K
L401
470μH
L402
470μH
BLK TXT
TXTBLKIN
TXTCLK
HMEGA
VMEGA
SCL
SDA
SCP
HDEF
HP100
UC
VA1
VA0
5VD
+5V
+8V
+12V

B (2/2) BOARD
IC VOLTAGE TABLE

IC Voltage Table		
Ref No	Pin No	Voltage (V)
IC402	2-4	5.0
	5	7.8
	6-7	4.0
	8	3.7
	10-12	5.0
	14	0.7
	16	4.7
	17	5.1
	18	1.8
	19	7.5
	20	2.5
	21	3.3
	22	2.8
	23	3.3
	24	2.9
	25	3.3
	27	4.0
	28	3.8
IC405	5	3.2
	9	3.2
	13-14	3.2
IC406	16	4.8

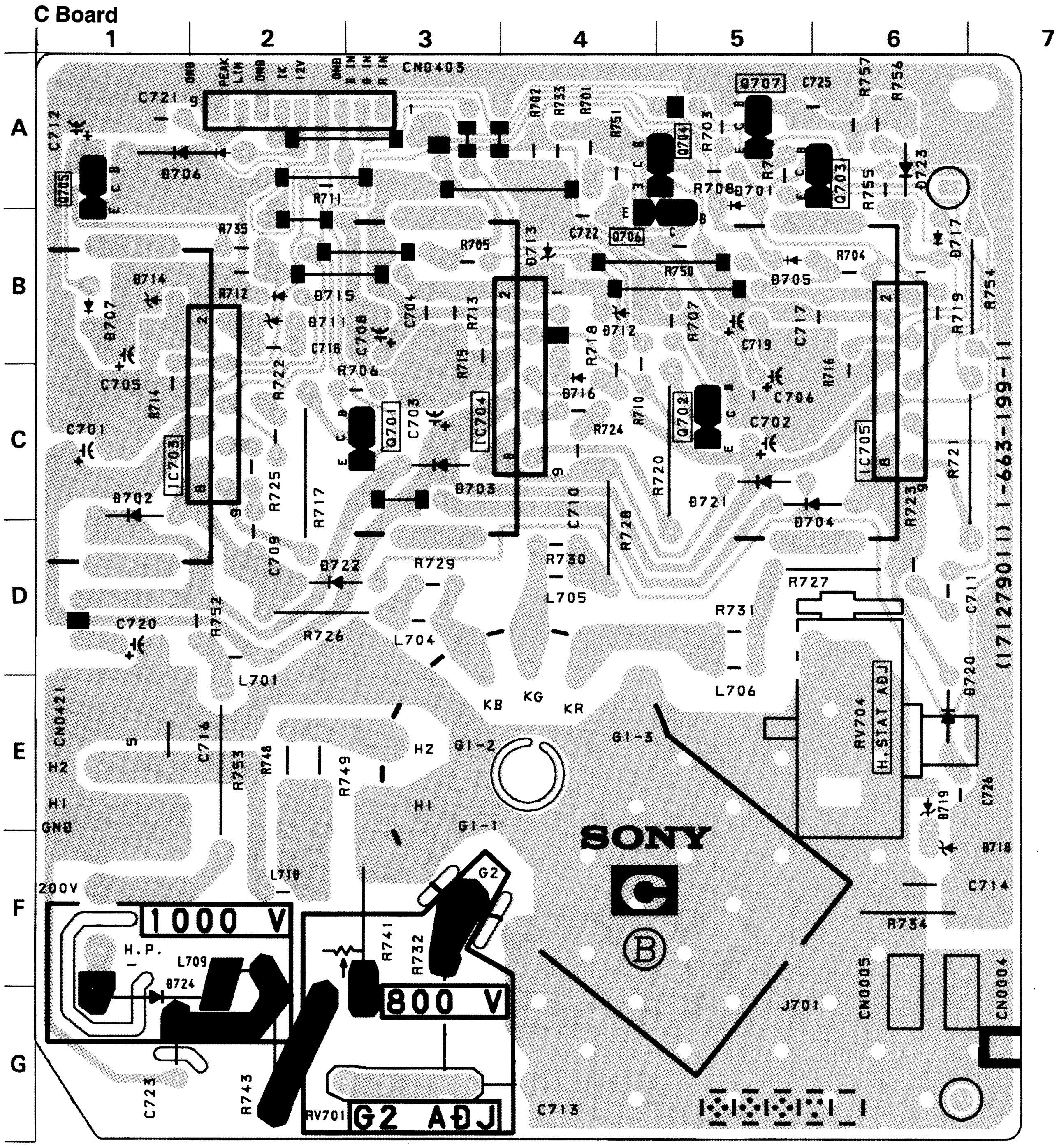

18
Q416
2SC2412K
CUT-OFF
5
A-T146
OFF

B (2/2) BOARD
IC VOLTAGE TABLE

IC Voltage Table		
Ref No	Pin No	Voltage (V)
IC402	2-4	5.0
	5	7.8
	6-7	4.0
	8	3.7
	10-12	5.0
	14	0.7
	16	4.7
	17	5.1
	18	1.8
	19	7.5
	20	2.5
	21	3.3
	22	2.8
	23	3.3
	24	2.9
	25	3.3
	27	4.0
	28	3.8
IC405	5	3.2
	9	3.2
	13-14	3.2
IC406	16	4.8

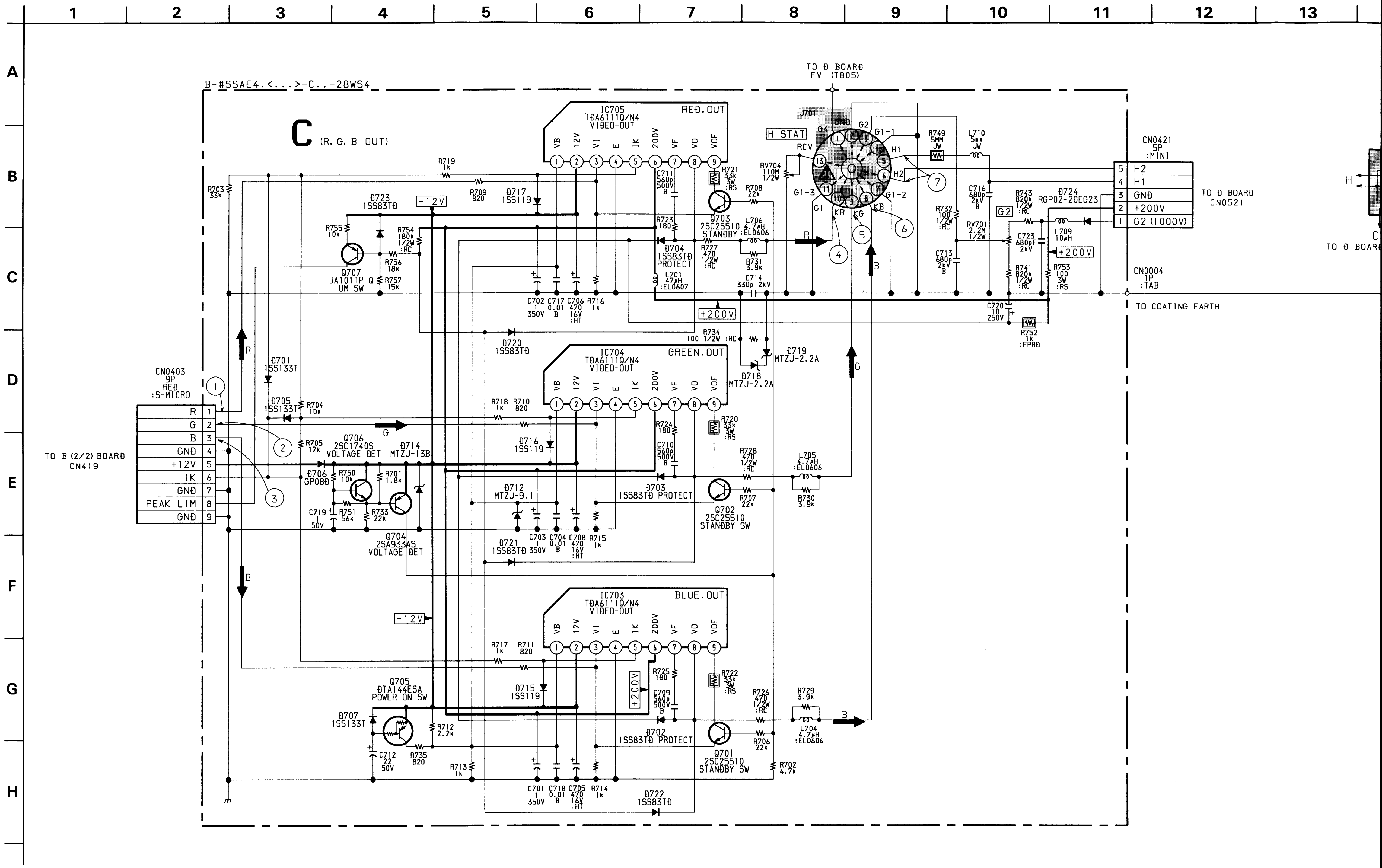
C [RGB OUT]

C Board


1
2
3
4
5
6
7
A
B
C
D
E
F
G
CN0403
GND
PEAK LIM
GND
IK
12V
GND
B IN
G IN
R IN
C721
C712
Q705
D706
R711
R735
D714
D707
C705
R712
D715
D711
C718
C708
C704
R706
R722
R714
IC703
C701
D702
R725
R717
C709
Q701
C703
R702
R733
R701
R751
Q704
R703
Q707
C725
R757
R756
Q703
D723
R708
D701
Q706
C722
D713
R705
R713
R715
IC704
D703
R750
D712
R718
D716
R724
R710
R720
R728
C710
R707
C719
C717
Q702
C706
C702
D721
D704
R716
D705
R704
R755
D717
R719
R754
IC705
R723
R721
D722
R729
R730
L705
R731
R727
C711
(1712790111) 1-663-199-11
C720
R752
R726
L704
L701
L706
KB
KG
KR
CN0421
H2
H1
GND
C716
R753
R748
R749
H2
G1-2
G1-3
H1
G1-1
RV704
H.STAT ADJ
D720
D719
C726
D718
C714
SONY
C
B
200V
L710
1000 V
H.P.
L709
D724
R741
R732
G2
800 V
R734
CN0005
CN0004
J701
C723
R743
RV701
G2 ADJ
C713

C BOARD

IC	
IC703	C-1
IC704	C-3
IC705	C-6
TRANSISTOR	
Q701	C-3
Q702	C-5
Q703	A-6
Q704	A-5
Q705	A-1
Q706	B-4
Q707	A-5
DIODE	
D701	A-5
D702	C-1
D703	C-3
D704	C-6
D705	B-5
D706	A-1
D707	B-1
D712	B-4
D714	B-1
D715	B-2
D716	C-4
D717	B-6
D718	F-6
D719	E-6
D720	E-6
D721	C-5
D722	D-2
D723	A-6
D724	F-1
VARIABLE RESISTOR	
RV701	G-1
RV704	E-6


1
2
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4
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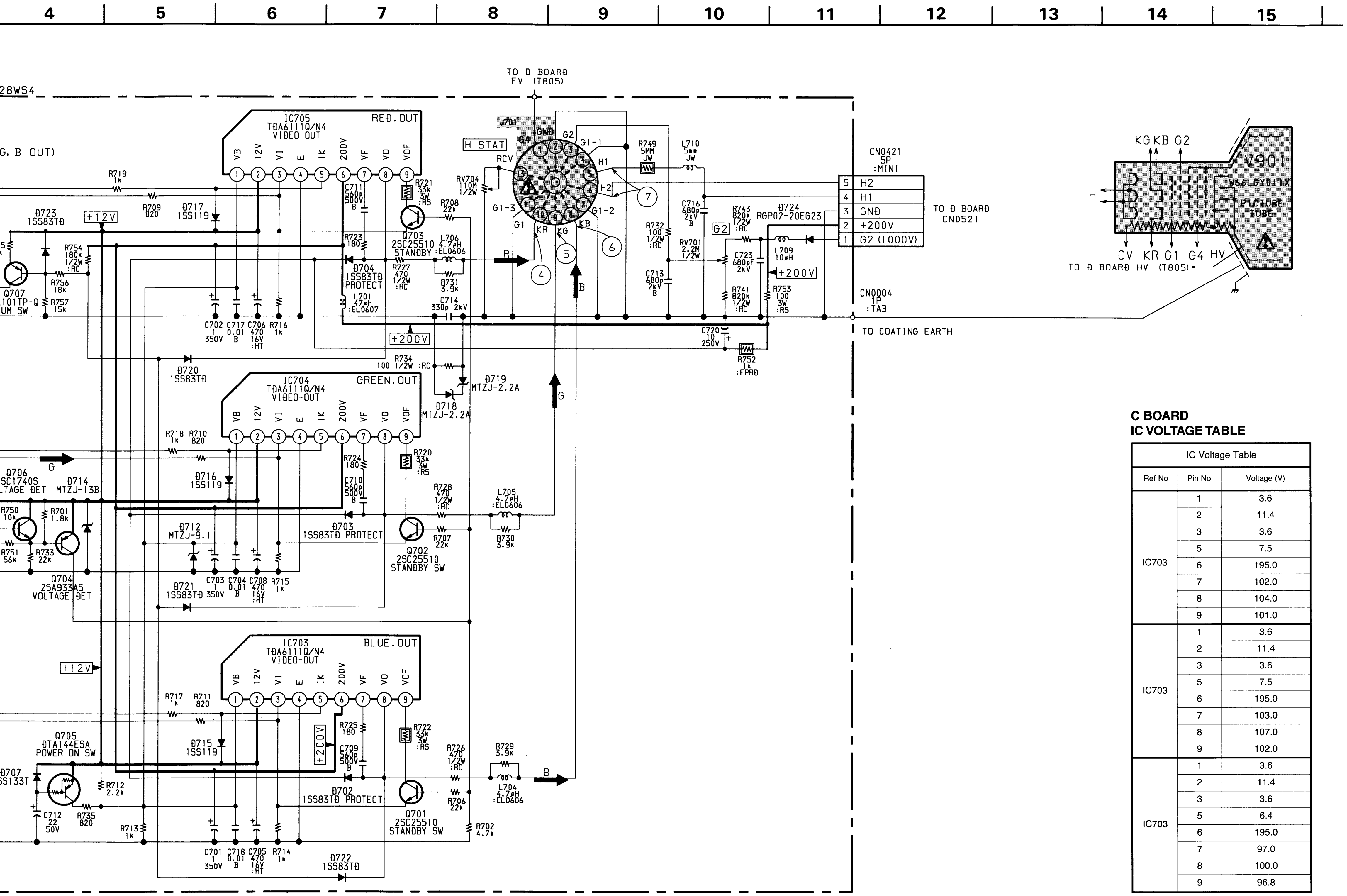
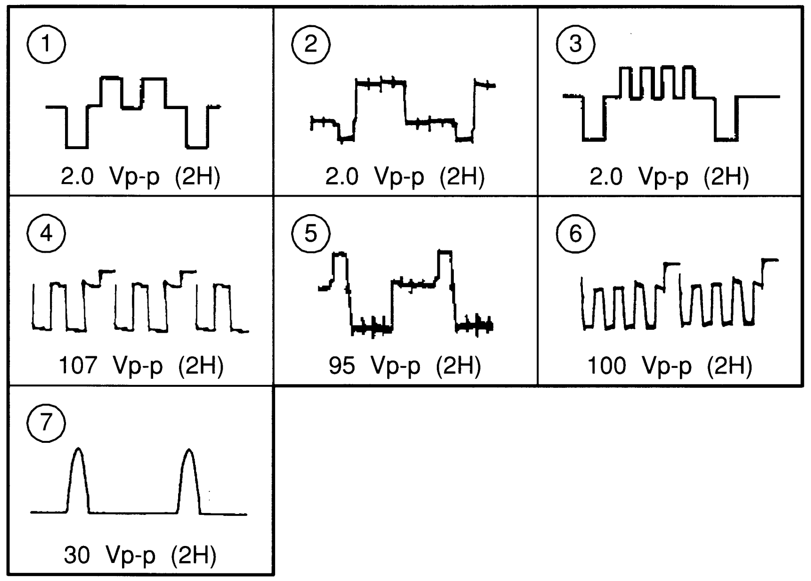
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
B-#SSAE4.<...>-C..-28WS4
C (R, G, B OUT)
TO D BOARD FV (T805)
J701
H STAT
RCV
GND
G4
G2
G1-1
H1
H2
G1-3
G1
KR
KG
KB
G1-2
IC705 TDA6111Q/N4 VIDEO-OUT RED.OUT
IC704 TDA6111Q/N4 VIDEO-OUT GREEN.OUT
IC703 TDA6111Q/N4 VIDEO-OUT BLUE.OUT
VB 12V VI E IK 200V VF VO VDF
CN0421 5P :MINI
H2
H1
GND
+200V
G2 (1000V)
TO D BOARD CN0521
CN0004 1P :TAB
TO COATING EARTH
TO D BOARD
CN0403 9P RED :S-MICRO
R
G
B
GND
+12V
IK
GND
PEAK LIM
GND
TO B (2/2) BOARD CN419
+12V
+200V
G2
Q707 JA101TP-Q UM SW
Q706 2SC1740S VOLTAGE DET
Q704 2SA933AS VOLTAGE DET
Q705 DTA144ESA POWER ON SW
Q703 2SC2551O STANDBY
Q702 2SC2551O STANDBY SW
Q701 2SC2551O STANDBY SW
D723 1SS83TD
D717 1SS119
D701 1SS133T
D705 1SS133T
D706 GP08D
D714 MTZJ-13B
D716 1SS119
D712 MTZJ-9.1
D721 1SS83TD 350V
D720 1SS83TD
D704 1SS83TD PROTECT
D703 1SS83TD PROTECT
D702 1SS83TD PROTECT
D718 MTZJ-2.2A
D719 MTZJ-2.2A
D715 1SS119
D707 1SS133T
D722 1SS83TD
D724 RGP02-20EG23
RV704 110M 1/2W
RV701 2.2M 1/2W
R749 5MM JW
L710 5mm JW
L701 47μH :EL0607
L706 4.7μH :EL0606
L705 4.7μH :EL0606
L704 4.7μH :EL0606
L709 10μH
C714 330p 2kV
C716 680p 2kV B
C713 680p 2kV B
C723 680pF 2kV
C720 10 250V
R752 1k :FPRD
R743 820k 1/2W :RC
R741 820k 1/2W :RC
R753 100 3W :RS
R732 100 1/2W :RC
R734 100 1/2W :RC
R703 33k
R719 1k
R709 820
R755 10k
R754 180k 1/2W :RC
R756 18k
R757 15k
R704 10k
R705 12k
R750 10k
R701 1.8k
R751 56k
R733 22k
C719 1 50V
R718 1k
R710 820
R717 1k
R711 820
R713 1k
R712 2.2k
R735 820
C712 22 50V
C702 1 350V
C717 0.01 B
C706 470 16V :HT
R716 1k
C703 1 350V
C704 0.01 B
C708 470 16V :HT
R715 1k
C701 1 350V
C718 0.01 B
C705 470 16V :HT
R714 1k
C711 560p 500V B
C710 560p 500V B
C709 560p 500V B
R723 180
R724 180
R725 180
R721 33k 3W :RS
R720 33k 3W :RS
R722 33k 3W :RS
R708 22k
R707 22k
R706 22k
R727 470 1/2W :RC
R728 470 1/2W :RC
R726 470 1/2W :RC
R731 3.9k
R730 3.9k
R729 3.9k
R702 4.7k


4
5
6
7
8
9
10
11
12
13
14
15
28WS4
G, B OUT)
IC705
TDA6111Q/N4
VIDEO-OUT
RED.OUT
IC704
TDA6111Q/N4
VIDEO-OUT
GREEN.OUT
IC703
TDA6111Q/N4
VIDEO-OUT
BLUE.OUT
VB
12V
VI
E
IK
200V
VF
VO
VOF
TO D BOARD
FV (T805)
J701
H STAT
GND
G4
G2
G1-1
G1-2
G1-3
H1
H2
RCV
KR
KG
KB
G1
RV704
110M
1/2W
Q703
2SC2551Q
STANDBY
Q702
2SC2551Q
STANDBY SW
Q701
2SC2551Q
STANDBY SW
Q704
2SA933AS
VOLTAGE DET
Q705
DTA144ESA
POWER ON SW
Q706
2SC1740S
VOLTAGE DET
Q707
UM SW
D704
1SS83TD
PROTECT
D703
1SS83TD PROTECT
D702
1SS83TD PROTECT
D714
MTZJ-13B
D712
MTZJ-9.1
D718
MTZJ-2.2A
D719
MTZJ-2.2A
D720
1SS83TD
D721
1SS83TD
D722
1SS83TD
D723
1SS83TD
D724
RGP02-20EG23
D715
1SS119
D716
1SS119
D717
1SS119
L701
47µH
:EL0607
L704
4.7µH
:EL0606
L705
4.7µH
:EL0606
L706
4.7µH
:EL0606
L709
10mH
L710
5mm
JW
R749
5MM
JW
RV701
2.2M
1/2W
C714
330p 2kV
C716
680p
2kV
C713
680p
2kV
C723
680pF
2kV
C720
10
250V
R752
1k
:FPRD
R753
100
3W
:RS
R741
820k
1/2W
R743
820k
1/2W
R732
100
1/2W
R734
100 1/2W :RC
+12V
+200V
G2
CN0421
5P
:MINI
5 H2
4 H1
3 GND
2 +200V
1 G2 (1000V)
TO D BOARD
CN0521
CN0004
1P
:TAB
TO COATING EARTH
KG KB G2
H
V901
W66LGY011X
PICTURE
TUBE
CV KR G1 G4 HV
TO D BOARD HV (T805)
R
G
B
①
②
③
④
⑤
⑥
⑦

WAVEFORMS C BOARD



C BOARD
IC VOLTAGE TABLE

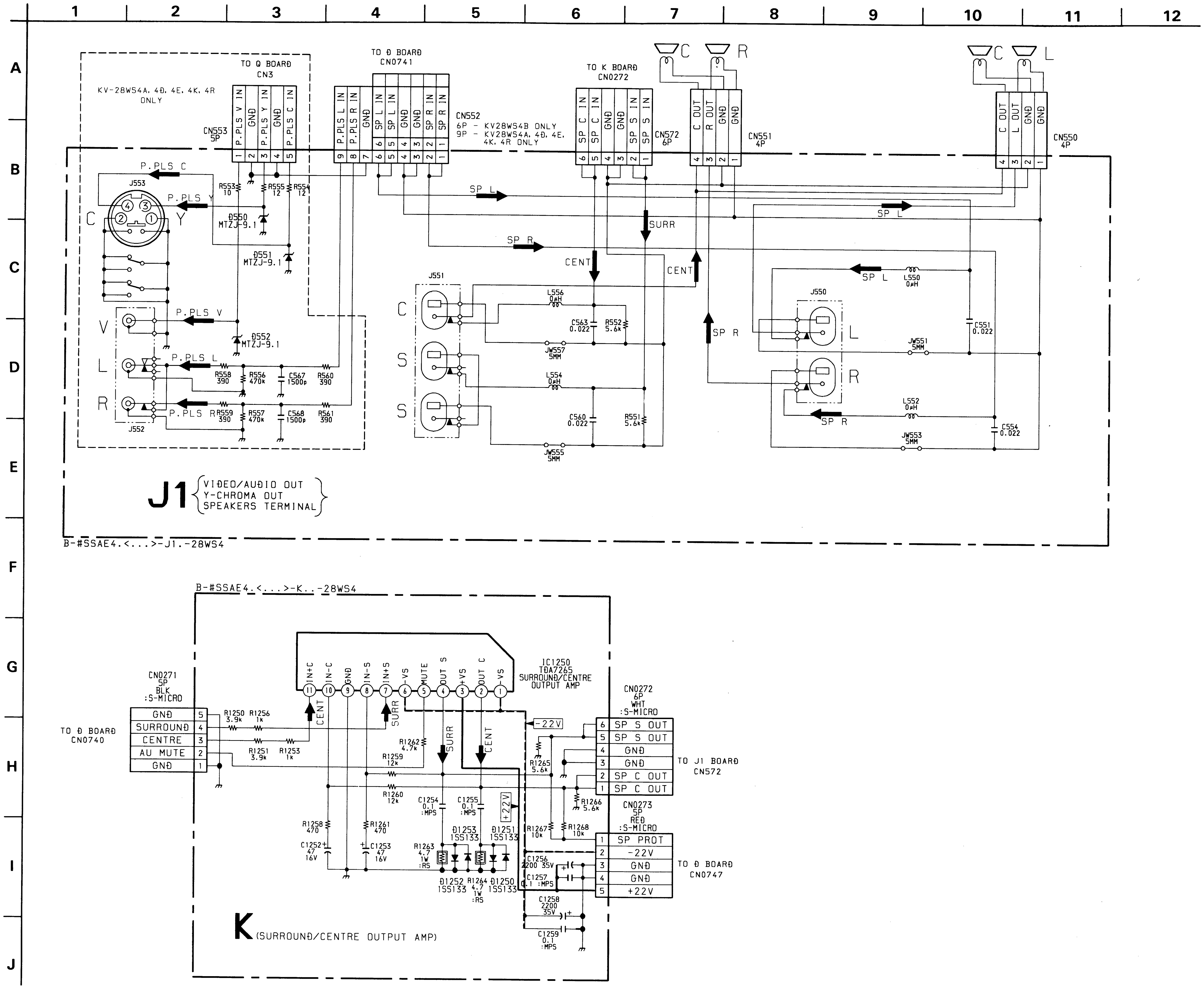
IC Voltage Table

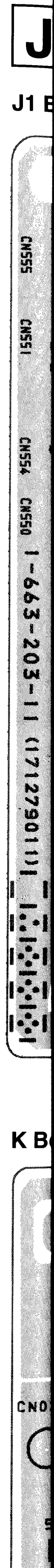
Ref No	Pin No	Voltage (V)
IC703	1	3.6
	2	11.4
	3	3.6
	5	7.5
	6	195.0
	7	102.0
	8	104.0
	9	101.0
IC703	1	3.6
	2	11.4
	3	3.6
	5	7.5
	6	195.0
	7	103.0
	8	107.0
	9	102.0
IC703	1	3.6
	2	11.4
	3	3.6
	5	6.4
	6	195.0
	7	97.0
	8	100.0
	9	96.8

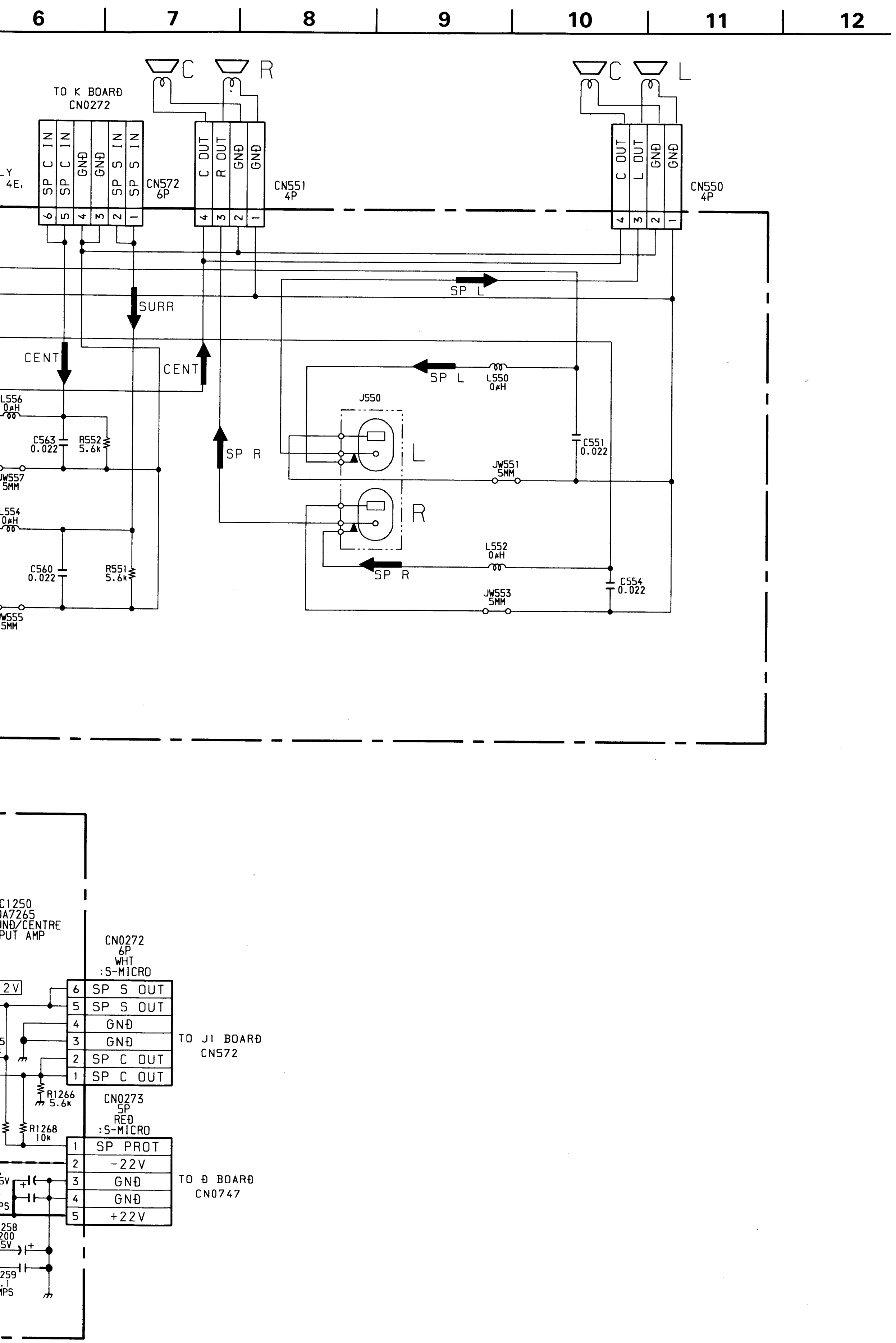
C BOARD
TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table

Ref No	B Base	C Collector	E Emitter
Q701	4.2	3.7	3.6
Q702	4.2	3.7	3.6
Q703	4.2	3.7	3.6
Q704	10.7	11.2	11.3
Q705	11.3	3.6	11.3
Q706	11.3	11.3	10.7
Q707	11.8	9.8	11.3

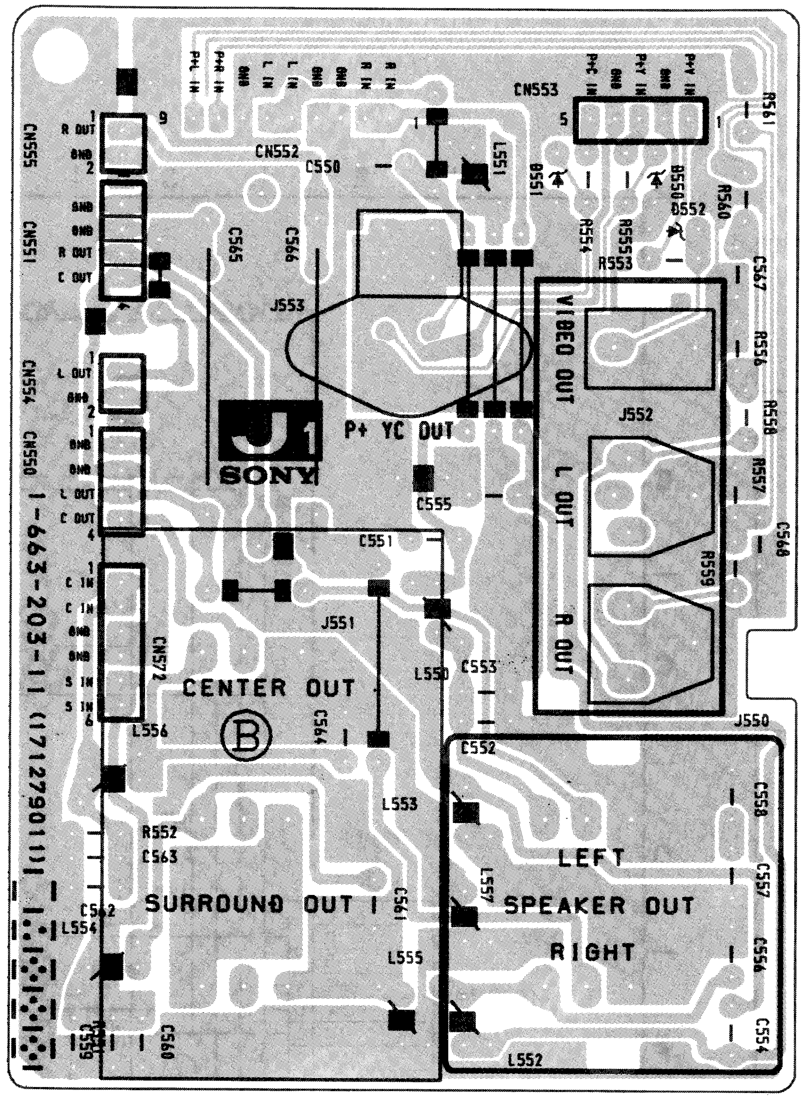

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
TO Q BOARD CN3
KV-28WS4A, 4D, 4E, 4K, 4R ONLY
CN553 5P
P.PLS V IN
GND
P.PLS Y IN
GND
P.PLS C IN
TO D BOARD CN0741
P.PLS L IN
P.PLS R IN
GND
SP L IN
SP L IN
GND
GND
SP R IN
SP R IN
CN552
6P - KV28WS4B ONLY
9P - KV28WS4A, 4D, 4E, 4K, 4R ONLY
TO K BOARD CN0272
SP C IN
SP C IN
GND
GND
SP S IN
SP S IN
CN572 6P
C
R
C OUT
R OUT
GND
GND
CN551 4P
C
L
C OUT
L OUT
GND
GND
CN550 4P
P.PLS C
J553
P.PLS Y
R553 10
R555 12
R554 12
D550 MTZJ-9.1
D551 MTZJ-9.1
C
Y
V
L
R
P.PLS V
D552 MTZJ-9.1
P.PLS L
P.PLS R
R558 390
R556 470k
C567 1500p
R560 390
R559 390
R557 470k
C568 1500p
R561 390
J552
SP L
SP R
SURR
CENT
CENT
J551
C
S
S
L556 0μH
C563 0.022
R552 5.6k
JW557 5MM
L554 0μH
C560 0.022
R551 5.6k
JW555 5MM
SP R
SP L
L550 0μH
J550
L
R
C551 0.022
JW551 5MM
L552 0μH
C554 0.022
JW553 5MM
SP L
SP R
J1
VIDEO/AUDIO OUT
Y-CHROMA OUT
SPEAKERS TERMINAL
B-#SSAE4.<...>-J1.-28WS4
B-#SSAE4.<...>-K..-28WS4
IN+C
IN-C
GND
IN-S
IN+S
-VS
MUTE
OUT S
+VS
OUT C
-VS
IC1250 TDA7265 SURROUND/CENTRE OUTPUT AMP
CN0271 5P BLK :S-MICRO
GND
SURROUND
CENTRE
AU MUTE
GND
TO D BOARD CN0740
R1250 3.9k
R1256 1k
R1251 3.9k
R1253 1k
CENT
SURR
R1262 4.7k
R1259 12k
R1260 12k
SURR
CENT
-22V
+22V
R1258 470
C1252 47 16V
R1261 470
C1253 47 16V
C1254 0.1 :MPS
C1255 0.1 :MPS
D1253 1SS133
D1251 1SS133
R1263 4.7 1W :RS
D1252 1SS133
R1264 4.7 1W :RS
D1250 1SS133
R1265 5.6k
R1266 5.6k
R1267 10k
R1268 10k
C1256 2200 35V
C1257 0.1 :MPS
C1258 2200 35V
C1259 0.1 :MPS
CN0272 6P WHT :S-MICRO
SP S OUT
SP S OUT
GND
GND
SP C OUT
SP C OUT
TO J1 BOARD CN572
CN0273 5P RED :S-MICRO
SP PROT
-22V
GND
GND
+22V
TO D BOARD CN0747
K (SURROUND/CENTRE OUTPUT AMP)


J
J1 B
CN555
CN551
CN554
CN550
1-663-203-11
(1712790111)
K B
CNO

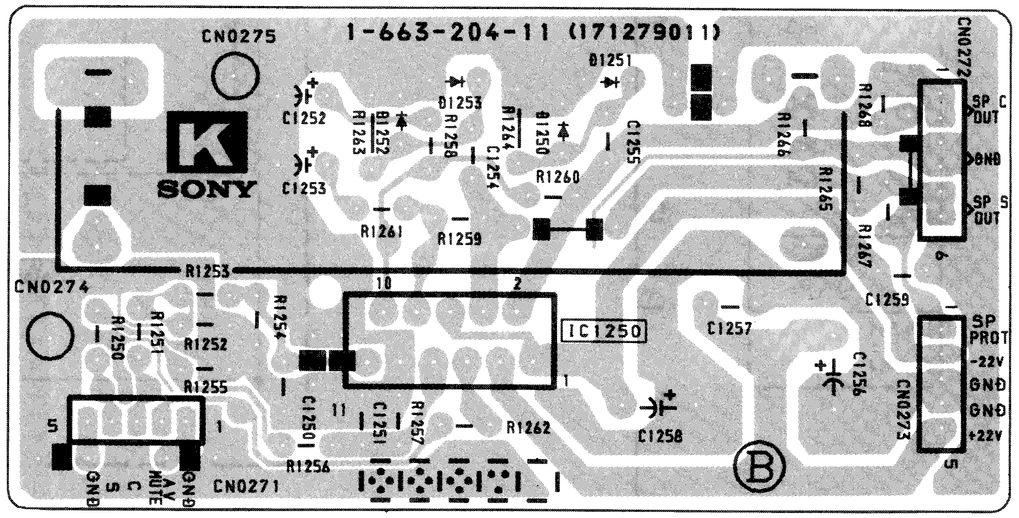

6
7
8
9
10
11
12
C
R
C
L
TO K BOARD
CN0272
SP C IN
SP C IN
GND
GND
SP S IN
SP S IN
CN572
6P
C OUT
R OUT
GND
GND
CN551
4P
C OUT
L OUT
GND
GND
CN550
4P
SURR
SP L
CENT
CENT
SP L
L550
0μH
J550
L
R
SP R
JW551
5MM
C551
0.022
L552
0μH
SP R
C554
0.022
JW553
5MM
L556
0μH
C563
0.022
R552
5.6k
JW557
5MM
L554
0μH
C560
0.022
R551
5.6k
JW555
5MM
IC1250
LA7265
SURROUND/CENTRE
OUTPUT AMP
CN0272
6P
WHT
:S-MICRO
SP S OUT
SP S OUT
GND
GND
SP C OUT
SP C OUT
TO J1 BOARD
CN572
R1266
5.6k
R1268
10k
CN0273
5P
RED
:S-MICRO
SP PROT
-22V
GND
GND
+22V
TO D BOARD
CN0747

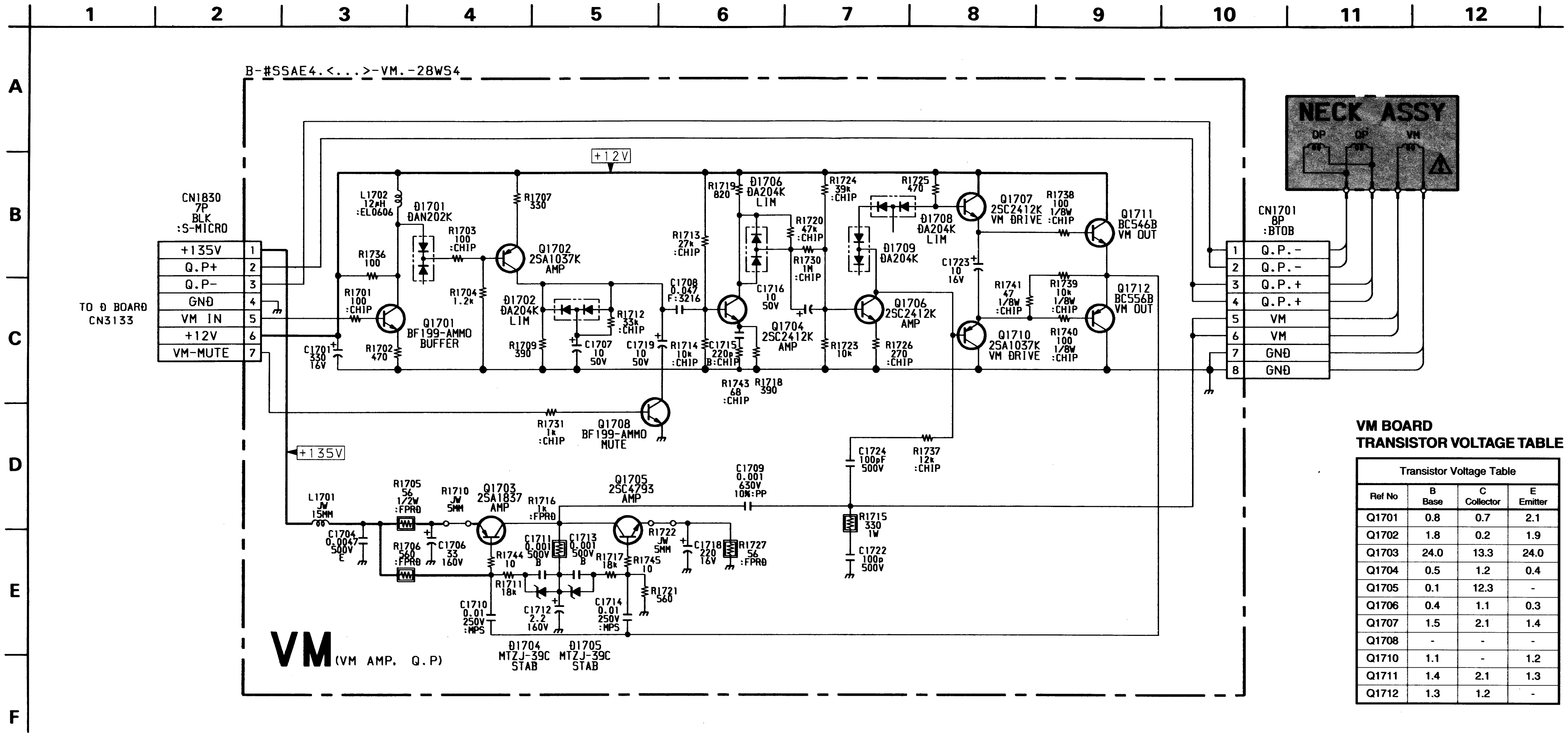
J1 [VIDEO/AUDIO OUT, Y-CHROMA OUT, SPEAKERS TERMINAL] K [SURROUND/CENTRE OUT AMP]

J1 Board


CN553
CN552
CN555
CN551
CN554
CN550
1-663-203-11 (171279011)
C550
C565
C566
J553
L551
P+ YC OUT
VIDEO OUT
L OUT
R OUT
J552
C555
C551
J551
CN572
CENTER OUT
L556
C564
L550
C553
C552
J550
L553
R552
C563
SURROUND OUT
C561
C562
L554
L555
L557
LEFT
SPEAKER OUT
RIGHT
L552
C560
C558
C557
C556
C554
C567
C568
R561
R560
R556
R558
R557
R559
R551
R554
R555
R553
D550
D552
SONY

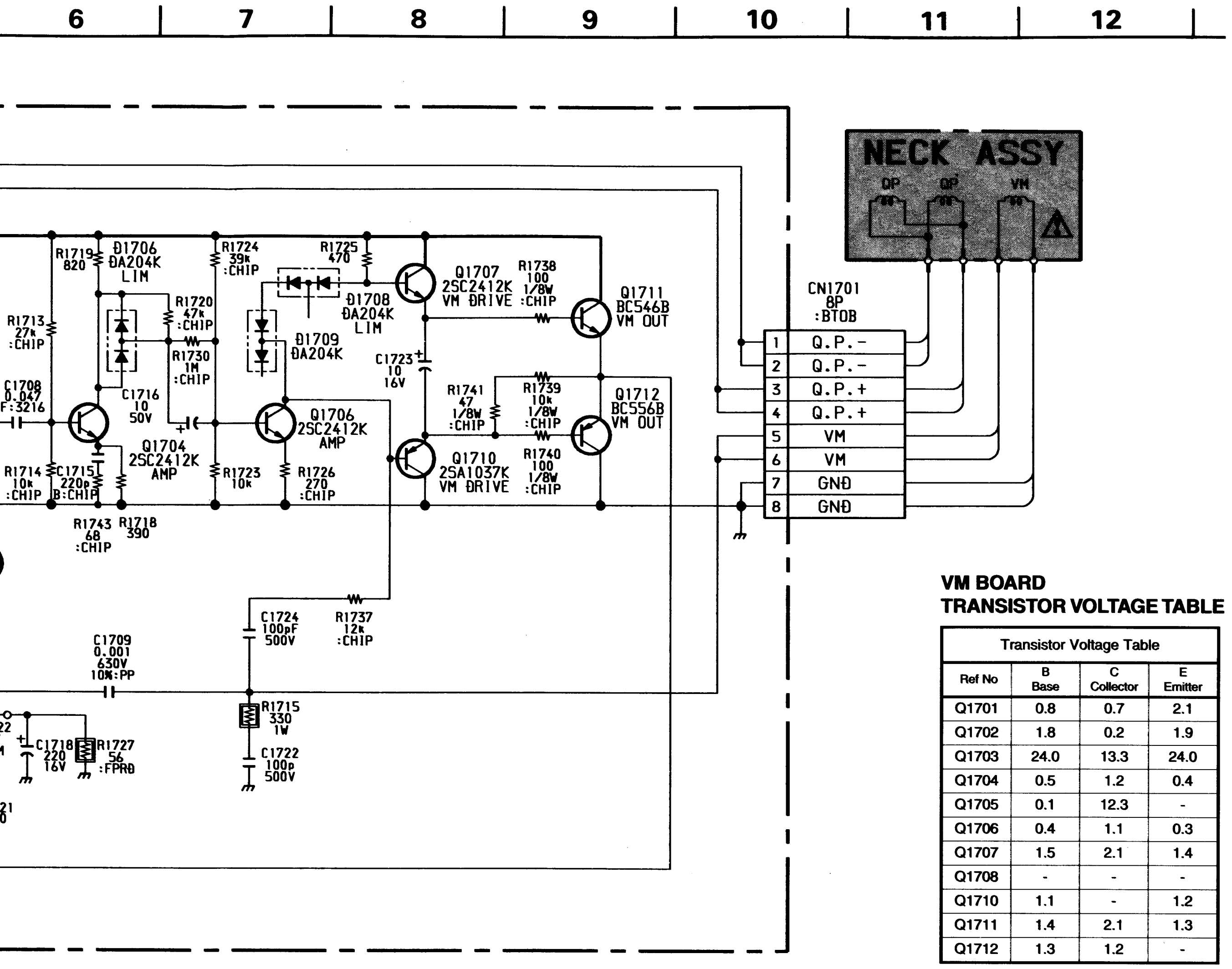
K Board


CN0275
1-663-204-11 (171279011)
CN0272
D1251
D1253
C1252
C1253
R1263
D1252
R1258
R1264
D1250
C1254
C1255
R1260
R1261
R1259
R1266
R1268
R1265
R1267
R1253
CN0274
R1250
R1251
R1252
R1254
R1255
IC1250
C1250
C1251
R1257
R1262
C1258
C1257
C1259
C1256
CN0273
R1256
CN0271
SP C OUT
GND
SP S OUT
SP PROT
-22V
GND
GND
+22V
GND
S
C
AV MUTE
GND
SONY


B-#SSAE4.<...>-VM.-28WS4
NECK ASSY
DP
DP
VM
CN1830 7P BLK :S-MICRO
+135V
Q.P+
Q.P-
GND
VM IN
+12V
VM-MUTE
TO D BOARD CN3133
CN1701 8P :BTOB
Q.P.-
Q.P.-
Q.P.+
Q.P.+
VM
VM
GND
GND
+12V
+135V
Q1701 BF199-AMMO BUFFER
Q1702 2SA1037K AMP
Q1703 2SA1837 AMP
Q1704 2SC2412K AMP
Q1705 2SC4793 AMP
Q1706 2SC2412K AMP
Q1707 2SC2412K VM DRIVE
Q1708 BF199-AMMO MUTE
Q1710 2SA1037K VM DRIVE
Q1711 BC546B VM OUT
Q1712 BC556B VM OUT
D1701 DAN202K
D1702 DA204K LIM
D1704 MTZJ-39C STAB
D1705 MTZJ-39C STAB
D1706 DA204K LIM
D1708 DA204K LIM
D1709 DA204K
L1701 JW 15MM
L1702 12µH :EL0606
VM (VM AMP, Q.P)
1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F

VM BOARD
TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q1701	0.8	0.7	2.1
Q1702	1.8	0.2	1.9
Q1703	24.0	13.3	24.0
Q1704	0.5	1.2	0.4
Q1705	0.1	12.3	-
Q1706	0.4	1.1	0.3
Q1707	1.5	2.1	1.4
Q1708	-	-	-
Q1710	1.1	-	1.2
Q1711	1.4	2.1	1.3
Q1712	1.3	1.2	-

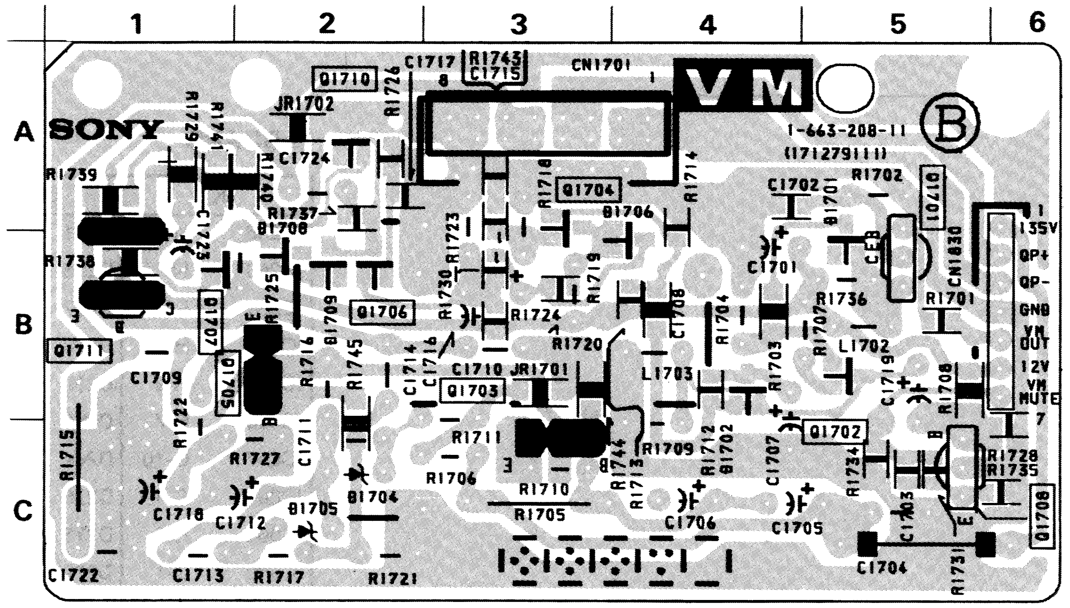

6
7
8
9
10
11
12
NECK ASSY
QP
QP
VM
CN1701
8P
:BTOB
1 Q.P.-
2 Q.P.-
3 Q.P.+
4 Q.P.+
5 VM
6 VM
7 GND
8 GND
Q1707
2SC2412K
VM DRIVE
Q1711
BC546B
VM OUT
Q1712
BC556B
VM OUT
Q1710
2SA1037K
VM DRIVE
Q1706
2SC2412K
AMP
Q1704
2SC2412K
AMP
D1706
DA204K
LIM
D1708
DA204K
LIM
D1709
DA204K
R1719
820
R1713
27k
:CHIP
C1708
0.047
F:3216
R1714
10k
:CHIP
C1715
220p
B:CHIP
R1743
68
:CHIP
R1718
390
R1720
47k
:CHIP
R1730
1M
:CHIP
C1716
10
50V
R1723
10k
R1724
39k
:CHIP
R1725
470
R1726
270
:CHIP
C1723
10
16V
R1738
100
1/8W
:CHIP
R1741
47
1/8W
:CHIP
R1739
10k
1/8W
:CHIP
R1740
100
1/8W
:CHIP
C1724
100pF
500V
R1737
12k
:CHIP
C1709
0.001
630V
10%:PP
R1715
330
1W
C1722
100p
500V
C1718
220
16V
R1727
56
:FPRD

VM BOARD
TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q1701	0.8	0.7	2.1
Q1702	1.8	0.2	1.9
Q1703	24.0	13.3	24.0
Q1704	0.5	1.2	0.4
Q1705	0.1	12.3	-
Q1706	0.4	1.1	0.3
Q1707	1.5	2.1	1.4
Q1708	-	-	-
Q1710	1.1	-	1.2
Q1711	1.4	2.1	1.3
Q1712	1.3	1.2	-

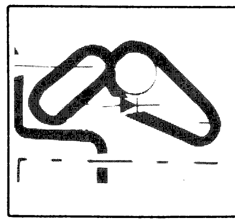
VM [VM OUT, Q.P]

VM Board


1
2
3
4
5
6
A
B
C
SONY
V M
1-663-208-11
(171279111)
B
CN1701
Q1710
Q1704
Q1706
Q1703
Q1711
Q1707
Q1705
Q1702
Q1701
Q1708
D1701
D1702
D1704
D1705
D1706
D1708
D1709
L1702
L1703
CN1630
135V
QP+
QP-
GND
VM OUT
12V
VM MUTE
C1701
C1702
C1704
C1705
C1706
C1707
C1709
C1712
C1713
C1718
C1722
C1724
R1701
R1702
R1705
R1706
R1709
R1710
R1711
R1717
R1720
R1721
R1724
R1727
R1728
R1735
R1736
R1739
R1738
JR1701
JR1702

VM BOARD

TRANSISTOR	
Q1701	A-5
Q1702	C-5
Q1703	B-3
Q1704	A-3
Q1705	B-2
Q1706	B-2
Q1707	B-1
Q1708	C-6
Q1710	A-2
Q1711	B-1
Q1712	A-1
DIODE	
D1701	A-5
D1702	C-4
D1704	C-2
D1705	C-2
D1706	A-4
D1708	B-2
D1709	B-2



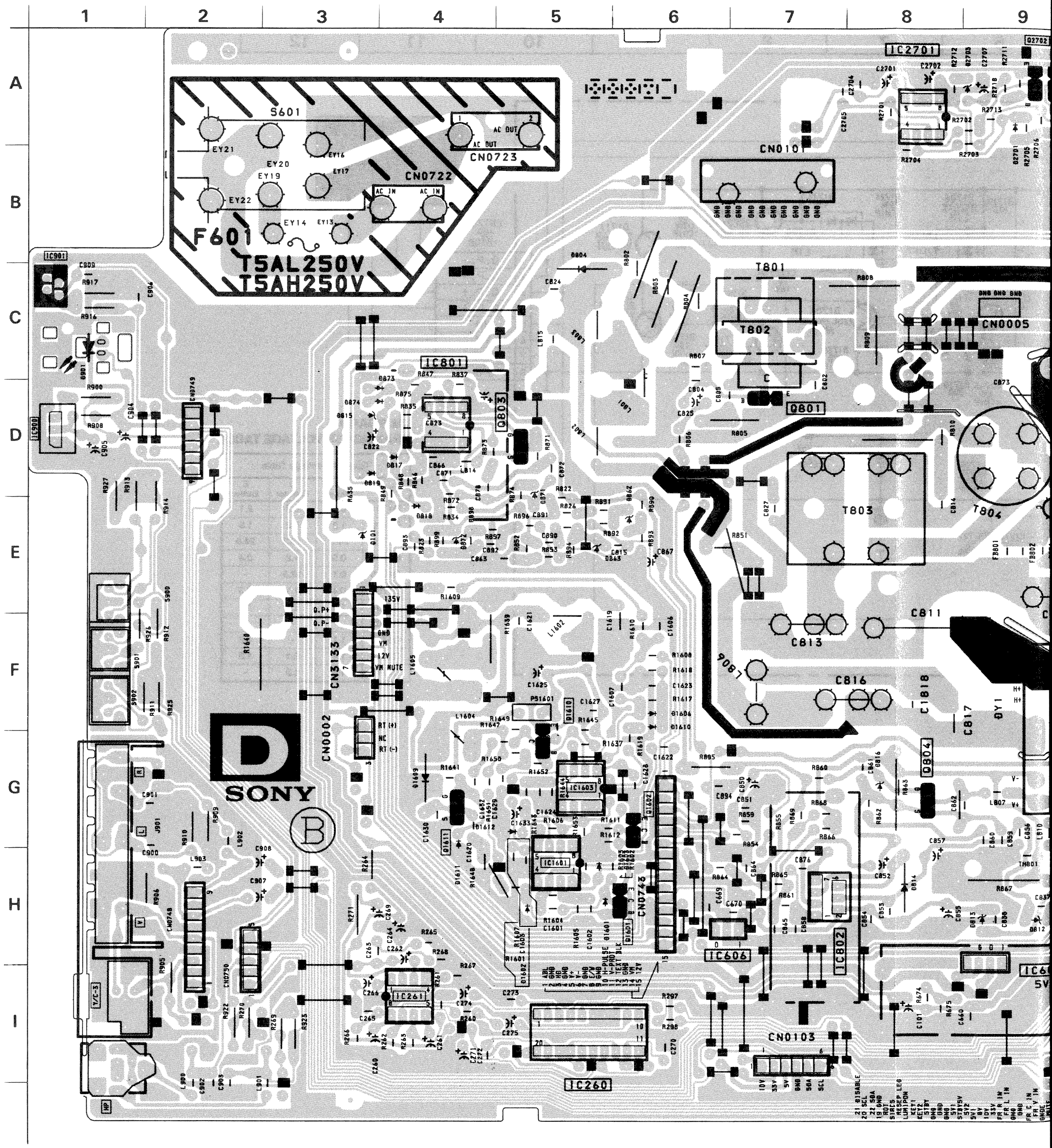
NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

D BOARD

IC		DIODE	
IC236	H-13	D101	E-3
IC260	I-5	D236	G-14
IC261	I-4	D237	G-14
IC603	H-11	D238	G-14
IC604	H-9	D239	G-14
IC606	H-7	D262	H-13
IC607	G-10	D264	G-13
IC801	C-4	D276	I-12
IC802	H-8	D278	H-12
IC900	D-1	D279	H-12
IC2701	A-8	D280	G-13
TRANSISTOR		D281	H-12
Q276	H12	D282	G-12
Q277	H-13	D612	A-12
Q278	I-14	D613	B-12
Q279	I-14	D631	A-13
Q280	H-12	D632	A-14
Q281	G-12	D633	B-11
Q282	G-13	D802	F-10
Q606	B-11	D803	E-10
Q607	A-11	D804	B-5
Q613	A-13	D805	C-15
Q614	A-10	D806	C-15
Q616	A-11	D810	G-11
Q617	G-13	D811	F-12
Q618	A-11	D812	H-9
Q620	A-15	D813	H-9
Q624	A-15	D814	H-8
Q801	D-7	D815	D-3
Q802	C-10	D816	G-8
Q803	D-5	D817	D-4
Q804	G-8	D818	E-4
Q1610	F-5	D819	D-3
Q1611	G-4	D873	D-4
Q2701	A-9	D874	D-3
		D901	C-1
		D1609	G-4
		D1611	H-4
		D2701	A-9
		D2702	A-9

D [HV OUT, PIN OU, POWER SUPPLY, CONTROL SW, AUDIO IN, Y-CHROMA IN, HEADPHONE IN, SIRCS RECEIVE, INDICATOR]

D Board


1
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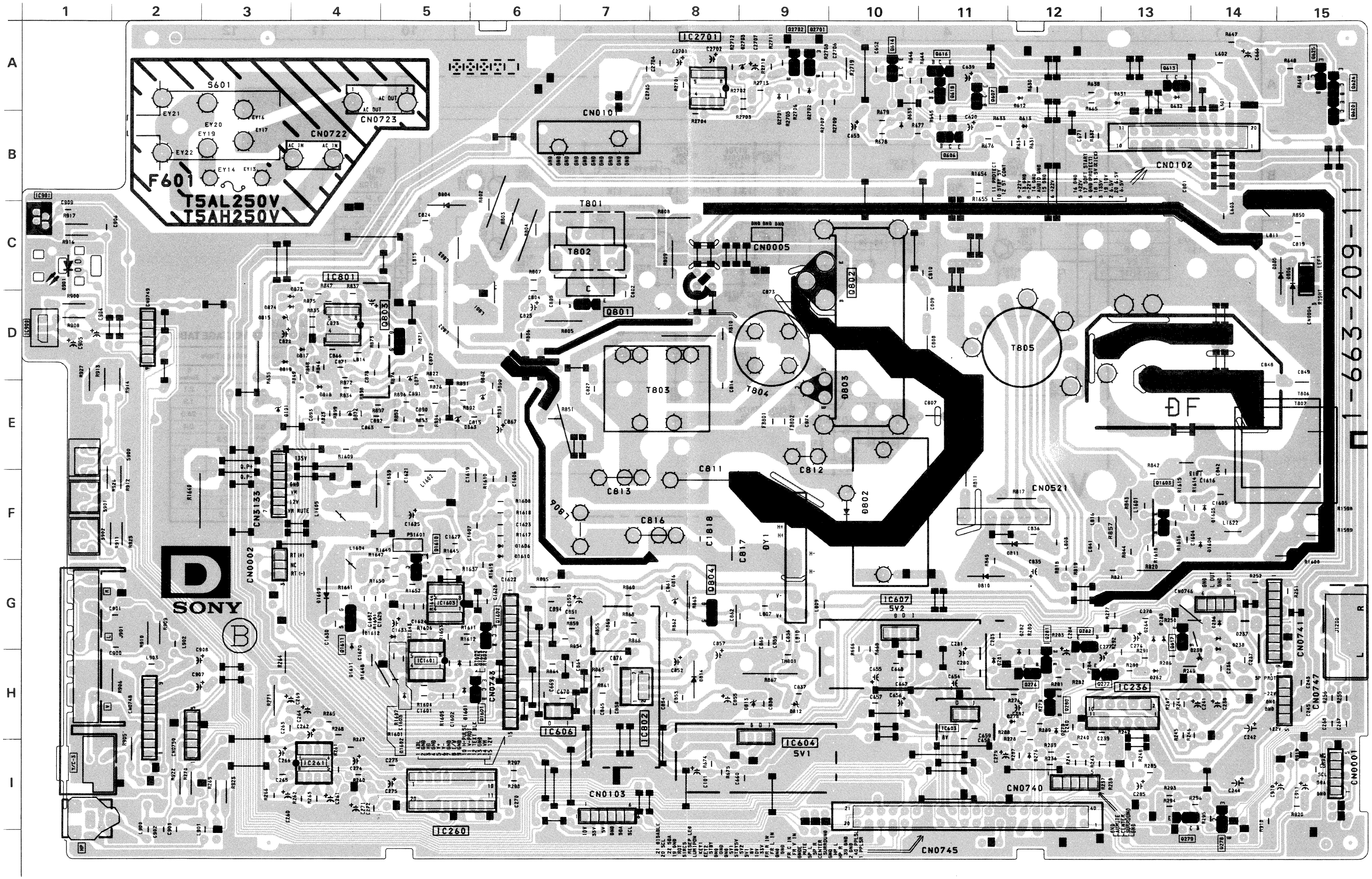
7
8
9
A
B
C
D
E
F
G
H
I
S601
EY21
EY20
EY19
EY22
EY16
EY17
EY14
EY13
F601
T5AL250V
T5AH250V
AC OUT
CN0723
CN0722
AC IN
IC2701
CN0101
IC901
T801
T802
T803
T804
Q801
CN0005
IC801
Q803
CN5133
CN0002
D
SONY
B
IC1603
IC1601
CN0743
C811
C813
C816
C1818
C817
DY1
D804
IC606
IC802
IC261
IC260
CN0103

D [HV OUT, PIN OU, POWER SUPPLY, CONTROL SW, AUDIO IN, Y-CHROMA IN, HEADPHONE IN, SIRCS RECEIVE, INDICATOR]

D Board

E
E-3
G-14
G-14
G-14
G-14
H-13
G-13
I-12
H-12
H-12
G-13
H-12
G-12
A-12
B-12
A-13
A-14
B-11
F-10
E-10
B-5
C-15
C-15
G-11
F-12
H-9
H-9
H-8
D-3
G-8
D-4
E-4
D-3
D-4
D-3
C-1
G-4
H-4
A-9
A-9


1
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3
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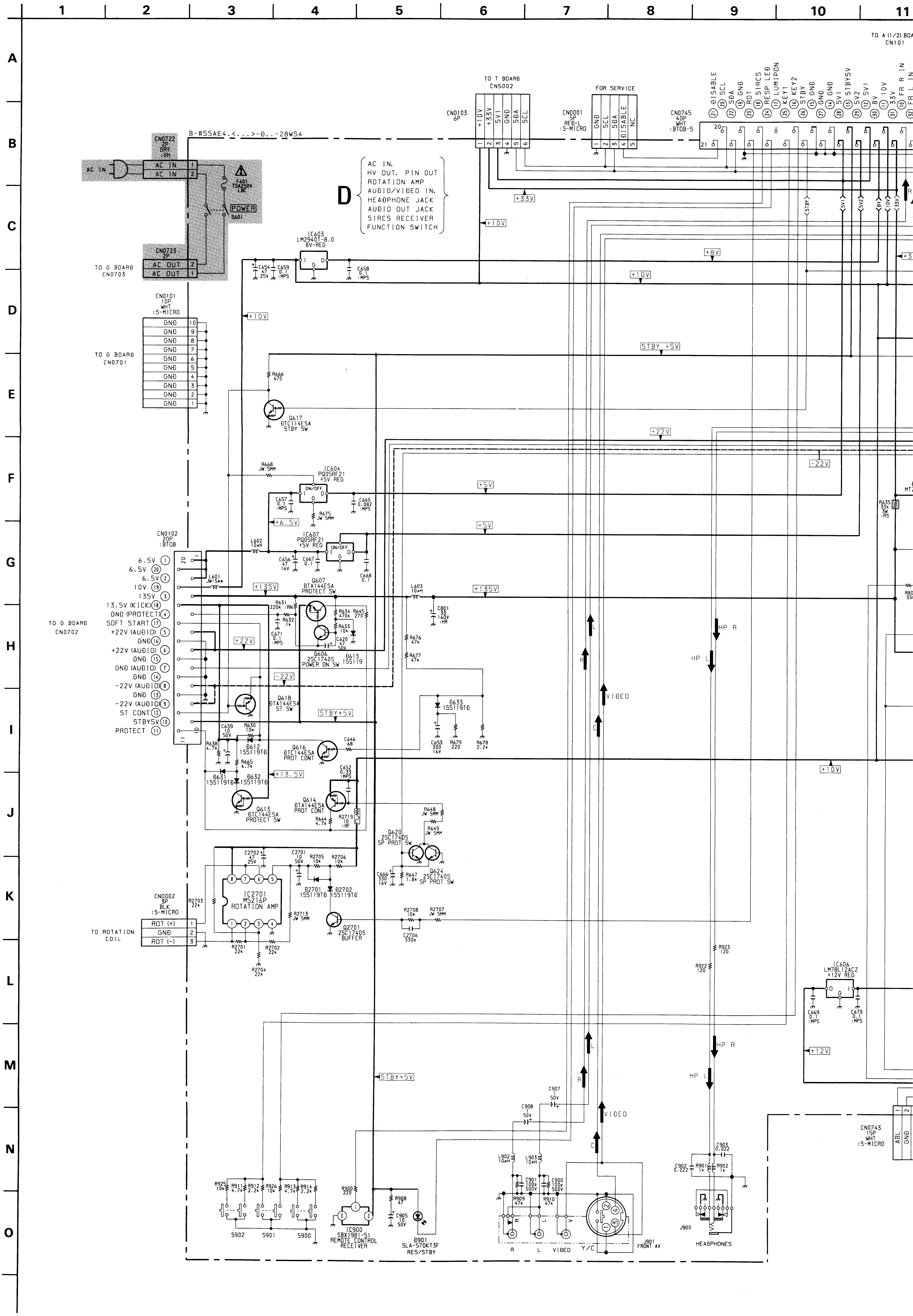
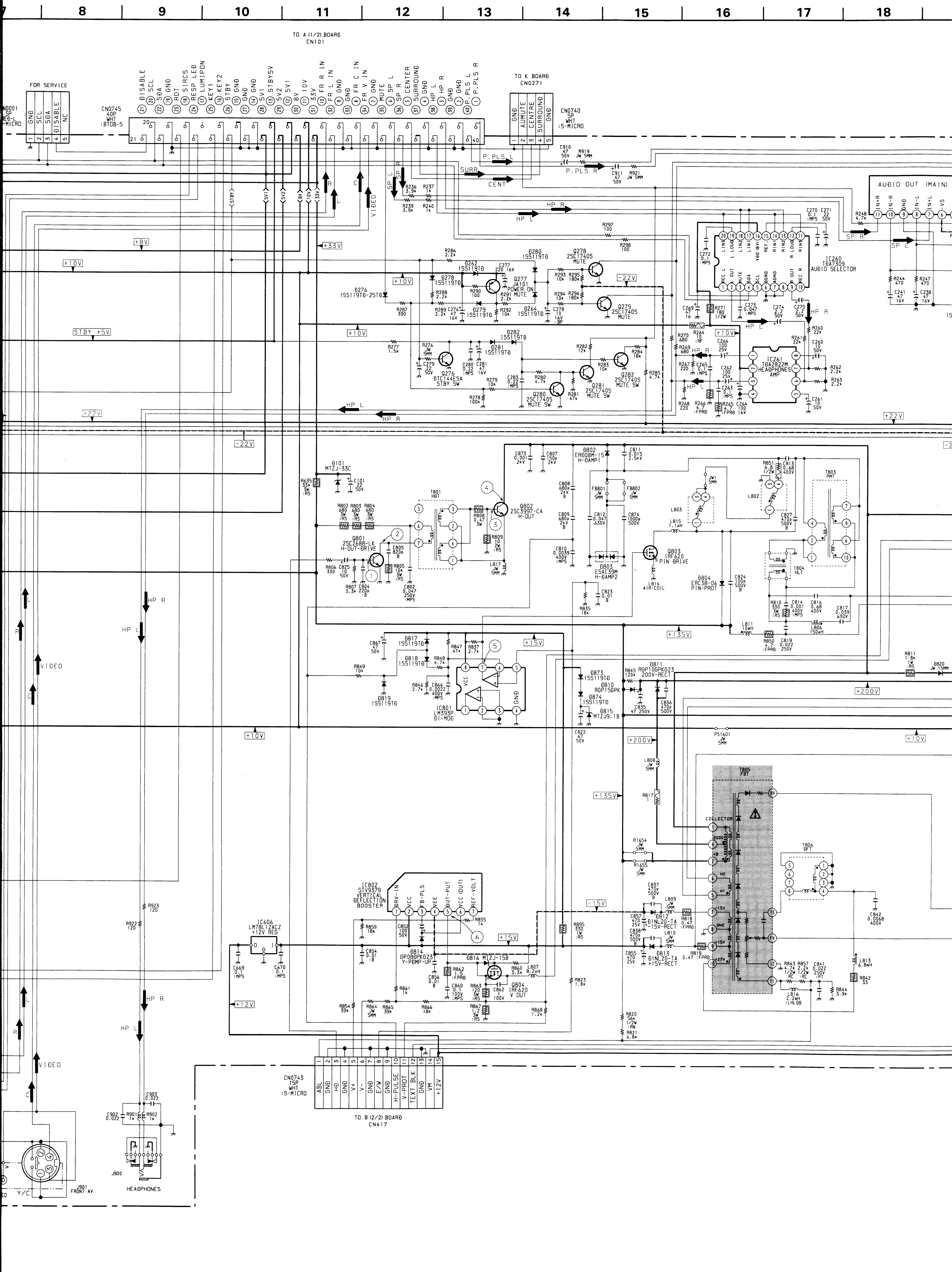
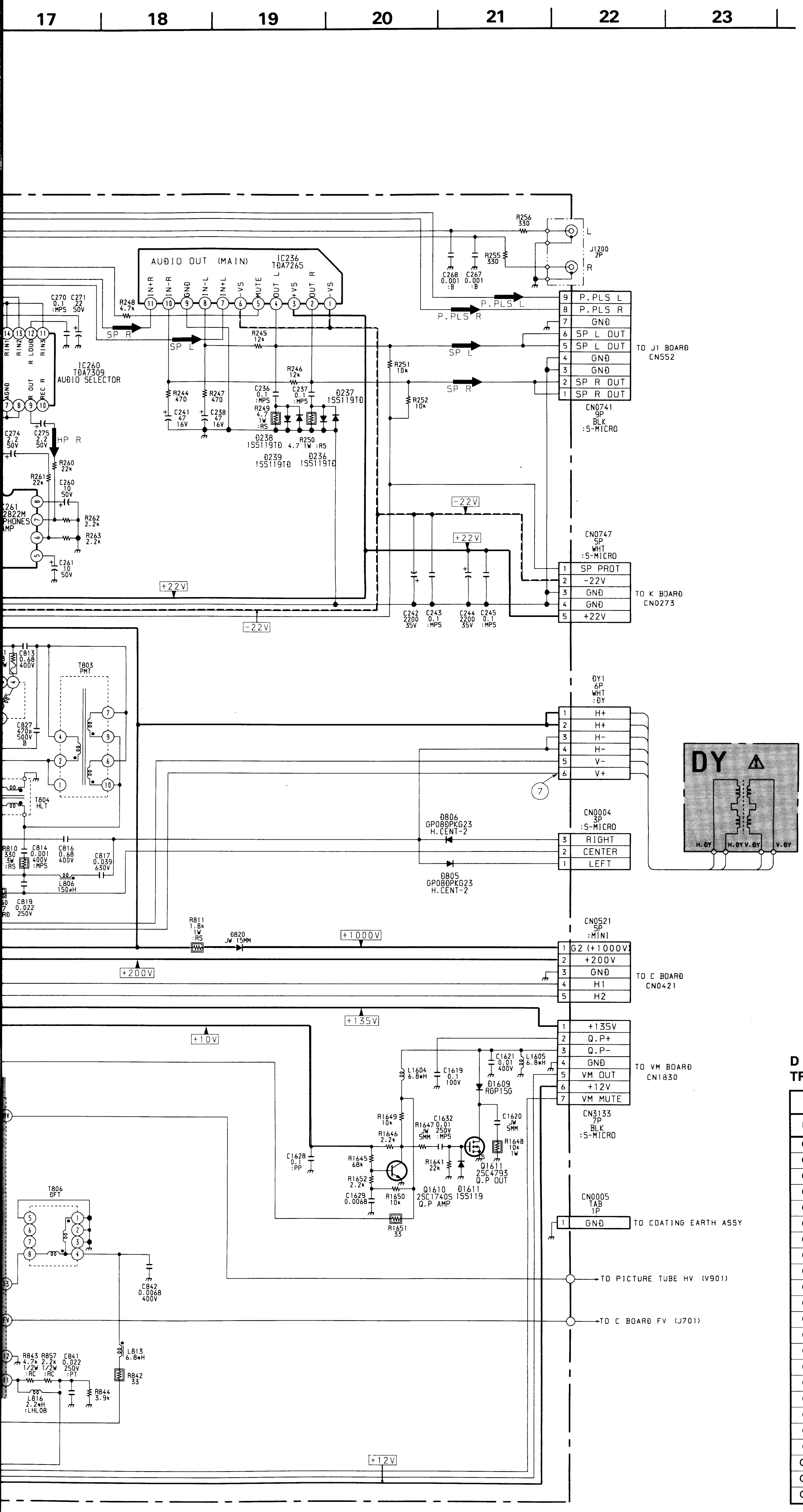
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
S601
F601
T5AL250V
T5AH250V
CN0722
CN0723
AC IN
AC OUT
CN0101
IC2701
T801
T802
T803
T804
T805
Q801
Q802
Q803
Q804
IC801
CN0005
CN0102
C811
C812
C813
C816
C1818
CN0521
CN3133
CN0002
CN0743
CN0103
IC606
IC802
IC604
5V1
IC607
5V2
IC1603
IC1601
IC261
IC260
IC236
CN0740
CN0745
CN0741
CN0747
CN0001
CN0746
CN0749
CN0748
CN0750
IC901
D
SONY
B
DF
1-663-209-11

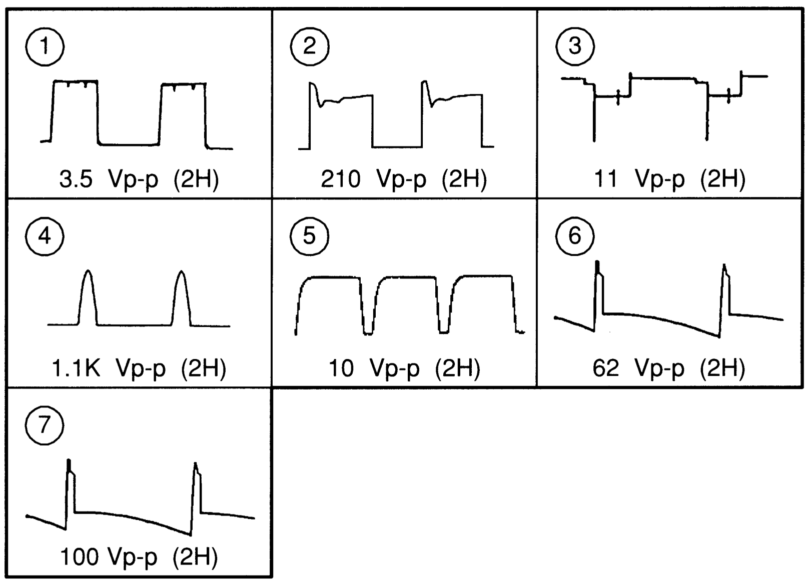


B-#SSAE4.<...>-D..-28WS4
D
AC IN, HV OUT, PIN OUT, ROTATION AMP, AUDIO/VIDEO IN, HEADPHONE JACK, AUDIO OUT JACK, SIRCS RECEIVER, FUNCTION SWITCH
CN0722 2P GRY :VH
AC IN
F601 T5A250V LBC
POWER S601
CN0723 2P
AC OUT
TO G BOARD CN0703
TO T BOARD CN5002
CN0103 6P
+10V +33V 5V1 GND SDA SCL
FOR SERVICE
CN0001 5P RED-L :S-MICRO
GND SCL SDA DISABLE NC
CN0745 40P WHT :BTOB-S
DISABLE SCL SDA GND ROT SIRCS RESP LED LUMIPON KEY1 KEY2 STBY GND GND STBY5V 5V1 5V2 8V 10V 33V FR R IN FR L IN
TO A (1/2) BOARD CN101
IC603 LM2940T-8.0 8V-REG
C654 47 25V
C659 0.1 :MPS
C658 0.1 :MPS
+8V
+10V
+33V
CN0101 10P WHT :S-MICRO
TO G BOARD CN0701
GND
STBY +5V
R666 470
Q617 DTC114ESA STBY SW
+22V
-22V
R668 JW 5MM
IC604 PQ05RF21 +5V REG
C657 0.1 :MPS
R675 JW 5MM
C660 0.082 :MPS
+6.5V
+5V
R635 33k 5W :RS
CN0102 20P :BTOB
6.5V 6.5V 6.5V 10V 135V 13.5V (KICK) GND (PROTECT) SOFT START +22V (AUDIO) GND +22V (AUDIO) GND GND (AUDIO) GND -22V (AUDIO) GND -22V (AUDIO) ST CONT STBY5V PROTECT
TO G BOARD CN0702
L602 10µH
IC607 PQ05RF21 +5V REG
C656 47 16V
C667 0.1
C668 0.1
L601 JW-5mm
+135V
Q607 DTA144ESA PROTECT SW
R631 220k :RN
R632 1k
C671 0.1 :MPS
R634 470k
R645 270
R633 10k
C620 47 50V
Q606 2SC1740S POWER ON SW
D613 1SS119
L603 10µH
C801 33 160V :HR
R676 47k
R677 47k
Q618 DTA144ESA ST SW
STBY+5V
D633 1SS119TD
C653 330 16V
R679 220
R678 2.2k
C639 10 50V
R630 10k
R638 4.7k
D612 1SS119TD
R665 4.7k
Q616 DTC144ESA PROT CONT
C646 68
+13.5V
D631 1SS119TD
D632 1SS119TD
Q613 DTC144ESA PROTECT SW
C652 0.33 :MPS
Q614 DTA144ESA PROT CONT
R644 4.7k
R2719 10 :RF
R648 JW 5MM
R649 JW 5MM
Q620 2SC1740S SP PROT SW
Q624 2SC1740S SP PROT SW
C666 330 16V
R647 1.8k
+10V
C2702 47 25V
C2701 10 50V
R2705 10k
R2706 10k
D2701 1SS119TD
D2702 1SS119TD
IC2701 M5216P ROTATION AMP
CN0002 3P BLK :S-MICRO
R2703 22k
ROT (+) GND ROT (-)
TO ROTATION COIL
R2713 JW 5MM
Q2701 2SC1740S BUFFER
R2708 10k
R2707 JW 5MM
C2706 330P
R2701 22k
R2702 22k
R2704 22k
L R VIDEO C
HP R HP L
R923 120
R922 120
IC606 LM78L12ACZ +12V REG
C669 0.1 :MPS
C670 0.1 :MPS
+12V
R80 330
C907 1 50V
C908 1 50V
L902 10µH
L903 10µH
C901 100P 500V
C900 100P 500V
R909 47k
R910 47k
C903 0.022
C902 0.022
R901 1k
R902 1k
CN0743 15P WHT :S-MICRO
ABL GND
R925 10k R911 4.7k R912 2.2k R926 10k R913 4.7k R914 2.2k
S902 S901 S900
R900 220
R908 47
C905 10 50V
IC900 SBX1981-51 REMOTE CONTROL RECEIVER
D901 SLA-570KT3F RES/STBY
R L VIDEO Y/C
J901 FRONT AV
J900
HEADPHONES


8
9
10
11
12
13
14
15
16
17
18
TO A (1/2) BOARD CN101
FOR SERVICE
CN0745 40P WHT :BTOB-S
TO K BOARD CN0271
CN0740 5P WHT :S-MICRO
AUDIO OUT (MAIN)
IC260 TDA7309 AUDIO SELECTOR
IC261 TDA2822M HEADPHONES AMP
Q278 2SC1740S MUTE
Q279 2SC1740S MUTE
Q277 JA101 POWER ON MUTE
Q276 DTC144ESA STBY SW
Q280 2SC1740S MUTE SW
Q281 2SC1740S MUTE SW
Q282 2SC1740S MUTE SW
D101 MTZJ-33C
T801 HDT
Q801 2SC2688-LK H-OUT-DRIVE
Q802 2SC3997-CA H-OUT
D802 ERD08M-15 H-DAMP1
D803 ESAC39M H-DAMP2
Q803 IRF620 PIN DRIVE
D804 ERC38-06 PIN-PROT
L814 AIR-COIL
T803 PMT
T804 HLT
IC801 LM393P DI-MOD
D811 RGP10GPKG23 200V-RECT
D810 RGP15GPK
D815 MTZJ9.1B
T805 FBT
COLLECTOR
T806 DFT
IC802 STV9379 VERTICAL DEFLECTION BOOSTER
DRV-IN
VCC
FB-PLS
VEE
OUT-PUT
VCC (OUT)
REF-VOLT
D814 GP08BPKG23 Y-PUMP-UP
D816 MTZJ-15B
Q804 IRF620 V OUT
IC606 LM78L12ACZ +12V REG
D812 D1NL20-TA -15V-RECT
D813 D1NL20-TA +15V-RECT
CN0743 15P WHT :S-MICRO
ABL
GND
HD
GND
V+
V-
GND
E/W
GND
H-PULSE
V-PROT
TEXT BLK
GND
VM
+12V
TO B (2/2) BOARD CN417
J901 FRONT AV
Y/C
J900 HEADPHONES
+8V
+10V
+33V
STBY +5V
+22V
-22V
+135V
+15V
+200V
-15V
+12V
HP R
HP L
SP R
SP L
P.PLS L
P.PLS R
SURR
CENT
VIDEO


17
18
19
20
21
22
23
AUDIO OUT (MAIN)
IC236
TDA7265
IN+R
IN-R
GND
IN-L
IN+L
-VS
MUTE
OUT L
+VS
OUT R
-VS
IC260
TDA7309
AUDIO SELECTOR
RIN1
RIN2
R LOUD
RIN3
AGND
R OUT
REC R
SP R
SP L
HP R
P.PLS L
P.PLS R
R248 4.7k
C270 0.1 :MPS
C271 22 50V
R245 12k
R246 12k
R244 470
R247 470
C241 47 16V
C238 47 16V
C236 0.1 :MPS
C237 0.1 :MPS
R249 4.7 1W :RS
R250 4.7 1W :RS
D237 1SS119TD
D238 1SS119TD
D239 1SS119TD
D236 1SS119TD
C274 2.2 50V
C275 2.2 50V
R260 22k
R261 22k
C260 10 50V
R262 2.2k
R263 2.2k
C261 10 50V
2822M
PHONES
AMP
R251 10k
R252 10k
R256 330
R255 330
C268 0.001 :B
C267 0.001 :B
J1200 2P
L
R
P.PLS L
P.PLS R
GND
SP L OUT
SP L OUT
GND
GND
SP R OUT
SP R OUT
TO J1 BOARD CN552
CN0741 9P BLK :S-MICRO
-22V
+22V
C242 2200 35V
C243 0.1 :MPS
C244 2200 35V
C245 0.1 :MPS
CN0747 5P WHT :S-MICRO
SP PROT
-22V
GND
GND
+22V
TO K BOARD CN0273
C813 0.68 400V
T803 PMT
C827 470p 500V B
T804 HLT
R810 330 3W :RS
C814 0.001 400V :MPS
C816 0.68 400V
C817 0.039 630V
L806 150μH
C819 0.022 250V
DY1 6P WHT :DY
H+
H+
H-
H-
V-
V+
⑦
DY
H.DY
H.DY
V.DY
V.DY
D806 GP08DPKG23 H.CENT-2
D805 GP08DPKG23 H.CENT-2
CN0004 3P :S-MICRO
RIGHT
CENTER
LEFT
R811 1.8k 1W :RS
D820 JW 15MM
+1000V
+200V
CN0521 5P :MINI
G2 (+1000V)
+200V
GND
H1
H2
TO C BOARD CN0421
+135V
+10V
+135V
Q.P+
Q.P-
GND
VM OUT
+12V
VM MUTE
TO VM BOARD CN1830
CN3133 7P BLK :S-MICRO
L1604 6.8mH
C1619 0.1 100V
C1621 0.01 400V
L1605 6.8mH
D1609 RGP15G
C1620 JW 5MM
R1648 10k 1W
R1649 10k
R1646 2.2k
R1647 JW 5MM
C1632 0.01 250V :MPS
C1628 0.1 :PP
R1645 68k
R1652 2.2k
C1629 0.0068
R1650 10k
R1641 22k
Q1610 2SC1740S Q.P AMP
D1611 1SS119
Q1611 2SC4793 Q.P OUT
R1651 33
CN0005 TAB 1P
GND
TO COATING EARTH ASSY
T806 DFT
C842 0.0068 400V
TO PICTURE TUBE HV (V901)
TO C BOARD FV (J701)
R843 4.7k 1/2W :RC
R857 2.2k 1/2W :RC
C841 0.022 250V :PT
L813 6.8mH
R842 33
R844 3.9k
L816 2.2mH :LHL08
+12V

WAVEFORMS D BOARD

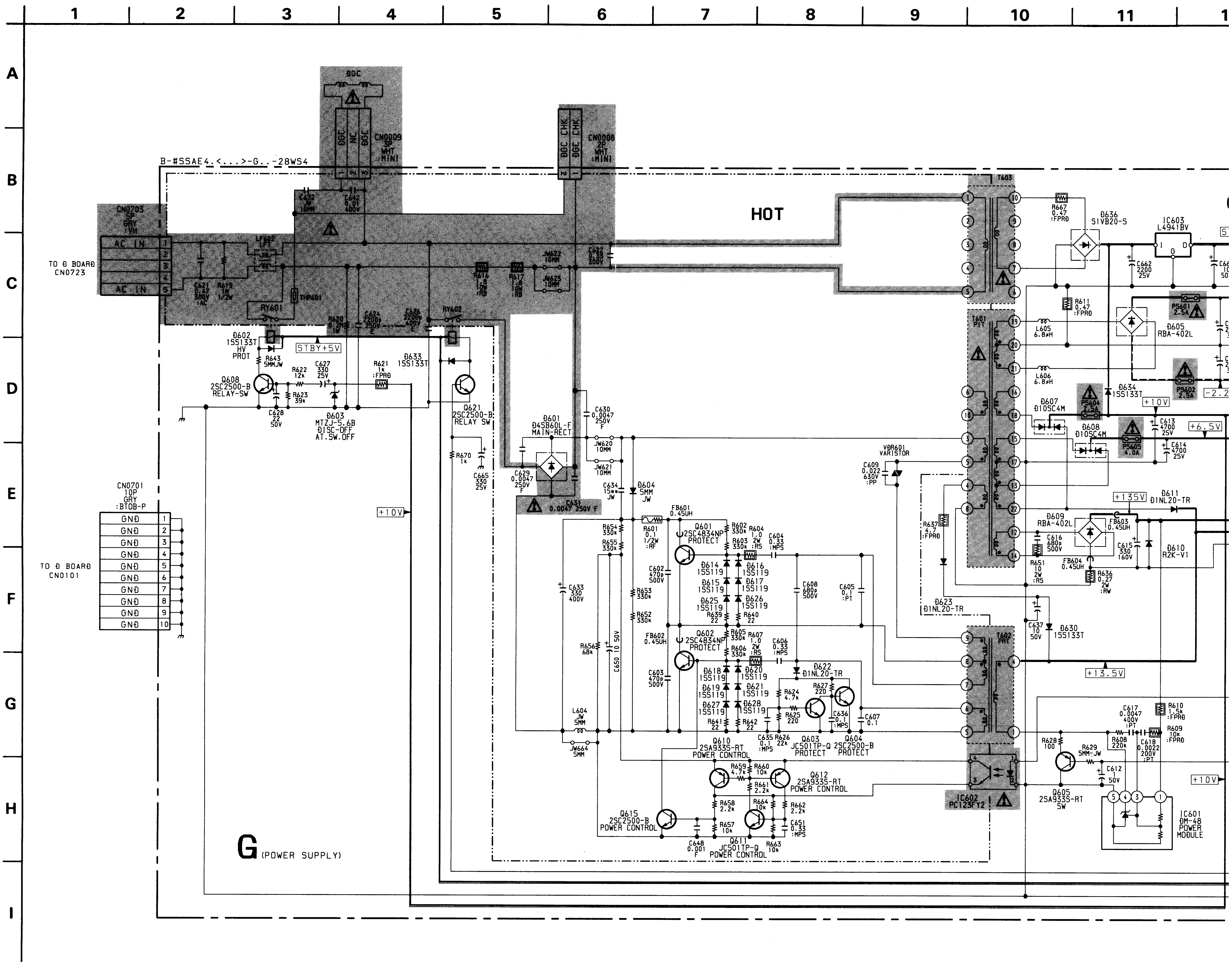


D BOARD TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q276	0.7	4.0	-
Q277	10.0	-	9.7
Q278	-1.3	-	-
Q279	-1.3	-	-1.3
Q280	0.4	0.7	-
Q281	0.7	-	-
Q282	0.7	-	-
Q801	-1.0	101.0	-
Q802	-	136.0	-
Q803	9.0	15.0	-
Q804	11.3	0.1	-1.3
Q606	0.5	4.8	0.3
Q607	4.8	1.6	4.8
Q613	13.5	-	-
Q614	10.0	9.0	10.0
Q616	0.7	-	-
Q617	0.7	3.5	-
Q618	3.5	-	-
Q620	-	10.0	-
Q624	-	10.0	-
Q2701	-	2.3	-
Q1610	-0.5	2.2	-
Q1611	0.2	43.4	-

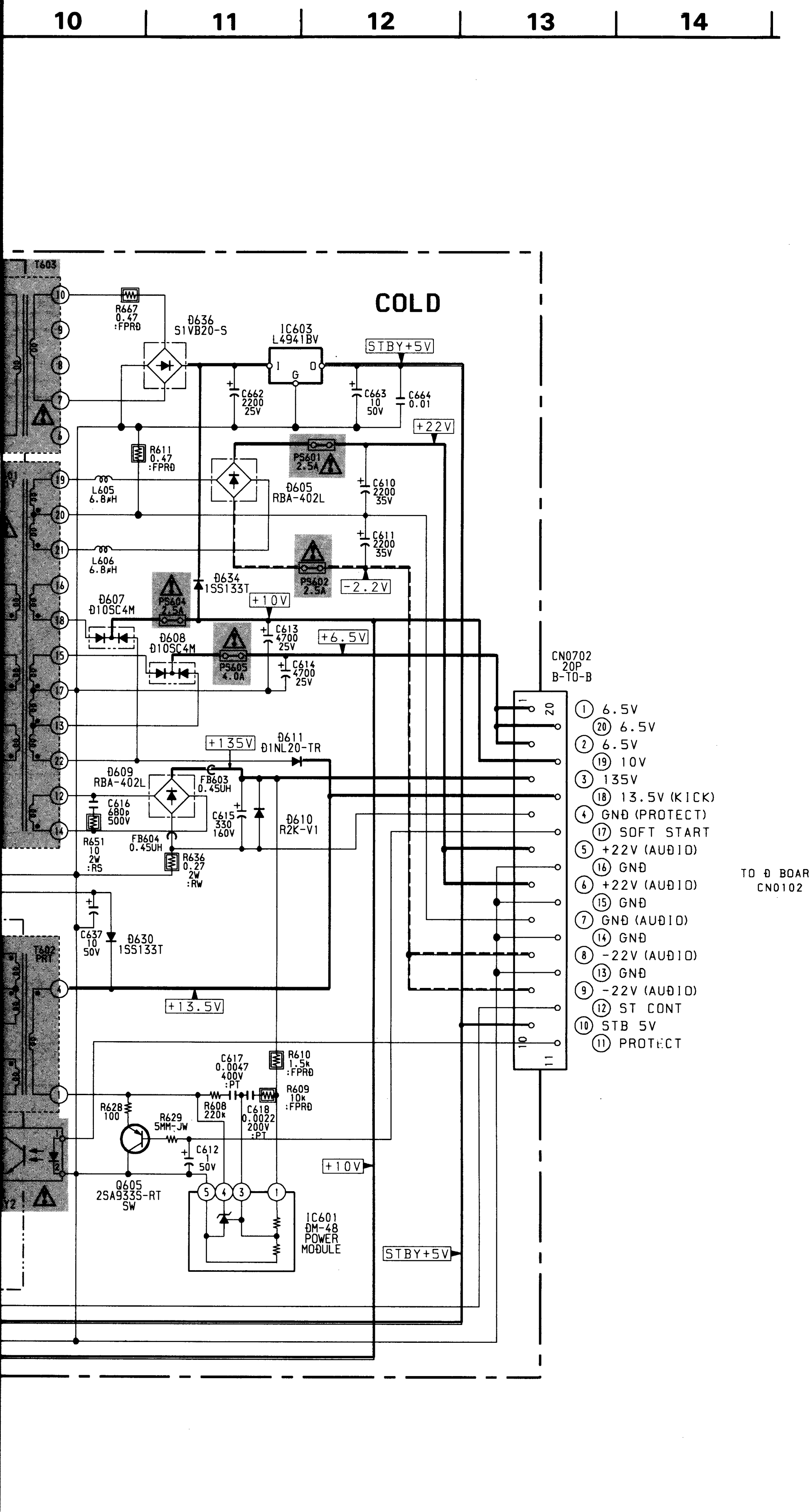
G BOARD
TRANSISTOR VOLTA

Transistor Voltage		
Ref No	B Base	C Collect
Q601	-1.6	-
Q602	0.2	293.
Q603	0.6	0.1
Q604	0.1	1.4
Q605	0.1	11.0
Q608	-	4.8
Q610	22.0	-2.3
Q611	-1.6	26.6
Q612	26.7	-1.1
Q615	-2.6	-1.5
Q621	0.6	-


1 2 3 4 5 6 7 8 9 10 11
A B C D E F G H I
DGC
CN0009 3P WHT :MINI
DGC NC DGC
DGC CHK DGC CHK
CN0008 2P WHT :MINI
B-#SSAE4.<...>-G..-28WS4
CN0703 5P GRY :VH
AC IN
AC IN
TO D BOARD CN0723
C632 JW 10MM
C642 0.01 400V
LF602 LFT
C621 0.47 300V :AC
R619 1M 1/2W
THP601
RY601
RY602
R620 8.2M 1W
C624 2200p 250V E
C626 2200p 400V E
R616 1.8 10W :RB
R617 1.8 10W :RB
JW622 10MM
JW623 10MM
C622 0.33 300V
HOT
D602 1SS133T HV PROT
STBY+5V
R643 5MMJW
R622 12k
C627 330 25V
R621 1k :FPRD
D633 1SS133T
Q608 2SC2500-B RELAY-SW
R623 39k
C628 22 50V
D603 MTZJ-5.6B DISC-OFF AT.SW.OFF
Q621 2SC2500-B RELAY SW
R670 1k
C665 330 25V
C630 0.0047 250V F
D601 D4SB60L-F MAIN-RECT
C629 0.0047 250V F
C631 0.0047 250V F
JW620 10MM
JW621 10MM
C634 15mm JW
D604 5MM JW
CN0701 10P GRY :BTOB-P
GND 1
GND 2
GND 3
GND 4
GND 5
GND 6
GND 7
GND 8
GND 9
GND 10
TO D BOARD CN0101
+10V
FB601 0.45UH
R601 0.1 1/2W :RF
R654 330k
R655 330k
Q601 2SC4834NP PROTECT
R602 330k
R603 330k
R604 1.0 2W :RS
C604 0.33 :MPS
C602 470p 500V
D614 1SS119
D615 1SS119
D625 1SS119
D616 1SS119
D617 1SS119
D626 1SS119
R639 22
R640 22
C608 680p 500V
C605 0.1 :PT
C633 330 400V
R653 330k
R652 330k
FB602 0.45UH
Q602 2SC4834NP PROTECT
R605 330k
R606 330k
R607 1.0 2W :RS
C606 0.33 :MPS
R656 68k
C650 10 50V
C603 470p 500V
D618 1SS119
D619 1SS119
D627 1SS119
D620 1SS119
D621 1SS119
D628 1SS119
R641 22
R642 22
D622 D1NL20-TR
R624 4.7k
R627 220
R625 220
C636 0.1 :MPS
C607 0.1
L604 JW 5MM
JW664 5MM
C635 0.1 :MPS
R626 22k
Q603 JC501TP-Q PROTECT
Q604 2SC2500-B PROTECT
Q610 2SA933S-RT POWER CONTROL
R659 4.7k
R660 10k
R661 2.2k
Q612 2SA933S-RT POWER CONTROL
R658 2.2k
R664 10k
R662 2.2k
Q615 2SC2500-B POWER CONTROL
R657 10k
C651 0.33 :MPS
C648 0.001 F
Q611 JC501TP-Q POWER CONTROL
R663 10k
G (POWER SUPPLY)
VDR601 VARISTOR
C609 0.022 630V :PP
R637 4.7 :FPRD
D623 D1NL20-TR
T603
T601 PIT
T602 PRT
IC602 PC123FY2
R667 0.47 :FPRD
D636 S1VB20-S
IC603 L4941BV
I G O
C662 2200 25V
R611 0.47 :FPRD
L605 6.8μH
L606 6.8μH
PS601 2.5A
D605 RBA-402L
PS602 2.5A
-2.2
D634 1SS133T
D607 D10SC4M
PS604 2.5A
+10V
C613 4700 25V
D608 D10SC4M
PS605 4.0A
C614 4700 25V
+6.5V
+135V
D611 D1NL20-TR
D609 RBA-402L
FB603 0.45UH
C616 680p 500V
R651 10 2W :RS
FB604 0.45UH
R636 0.27 2W :RW
C615 330 160V
D610 R2K-V1
C637 10 50V
D630 1SS133T
+13.5V
C617 0.0047 400V :PT
R610 1.5k :FPRD
R609 10k :FPRD
R628 100
R608 220k
C618 0.0022 200V :PT
R629 5MM-JW
C612 1 50V
Q605 2SA933S-RT SW
+10V
IC601 DM-48 POWER MODULE

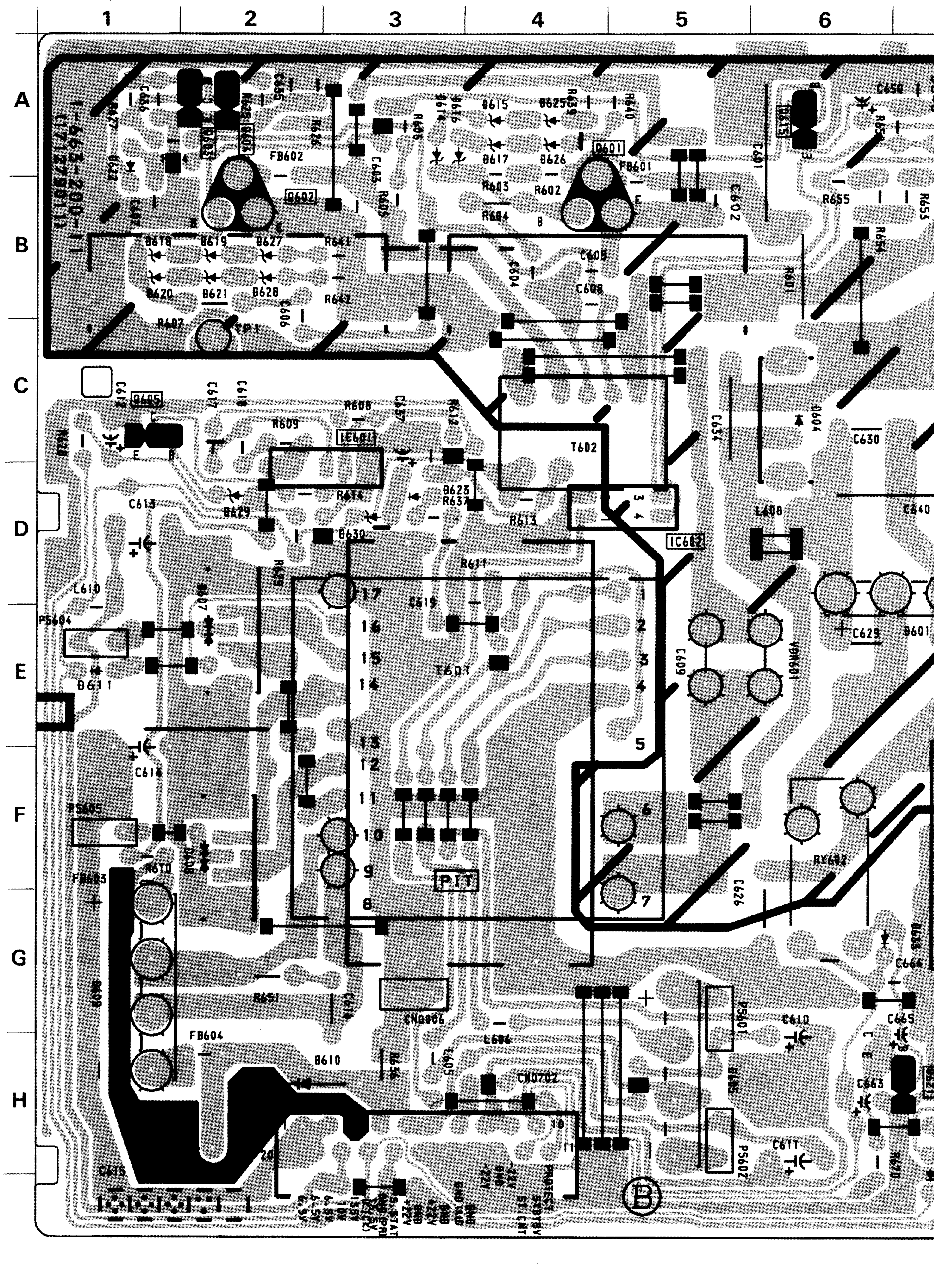
G BOARD
TRANSISTOR VOLTAGE TABLE

Transistor Voltage Table			
Ref No	B Base	C Collector	E Emitter
Q601	-1.6	-	-
Q602	0.2	293.0	-
Q603	0.6	0.1	-
Q604	0.1	1.4	-
Q605	0.1	11.0	-0.1
Q608	-	4.8	-0.1
Q610	22.0	-2.3	26.8
Q611	-1.6	26.6	-
Q612	26.7	-1.1	26.8
Q615	-2.6	-1.5	-
Q621	0.6	-	-0.1


10
11
12
13
14
COLD
IC603 L4941BV
D636 S1VB20-S
STBY+5V
+22V
D605 RBA-402L
PS601 2.5A
PS602 2.5A
-2.2V
+10V
+6.5V
D607 D10SC4M
D608 D10SC4M
PS604 2.5A
PS605 4.0A
+135V
D611 D1NL20-TR
D609 RBA-402L
FB603 0.45UH
FB604 0.45UH
D610 R2K-V1
D630 1SS133T
D634 1SS133T
+13.5V
CN0702 20P B-TO-B
① 6.5V
⑳ 6.5V
② 6.5V
⑲ 10V
③ 135V
⑱ 13.5V (KICK)
④ GND (PROTECT)
⑰ SOFT START
⑤ +22V (AUDIO)
⑯ GND
⑥ +22V (AUDIO)
⑮ GND
⑦ GND (AUDIO)
⑭ GND
⑧ -22V (AUDIO)
⑬ GND
⑨ -22V (AUDIO)
⑫ ST CONT
⑩ STB 5V
⑪ PROTECT
TO D BOARD CN0102
Q605 2SA933S-RT SW
IC601 DM-48 POWER MODULE
STBY+5V

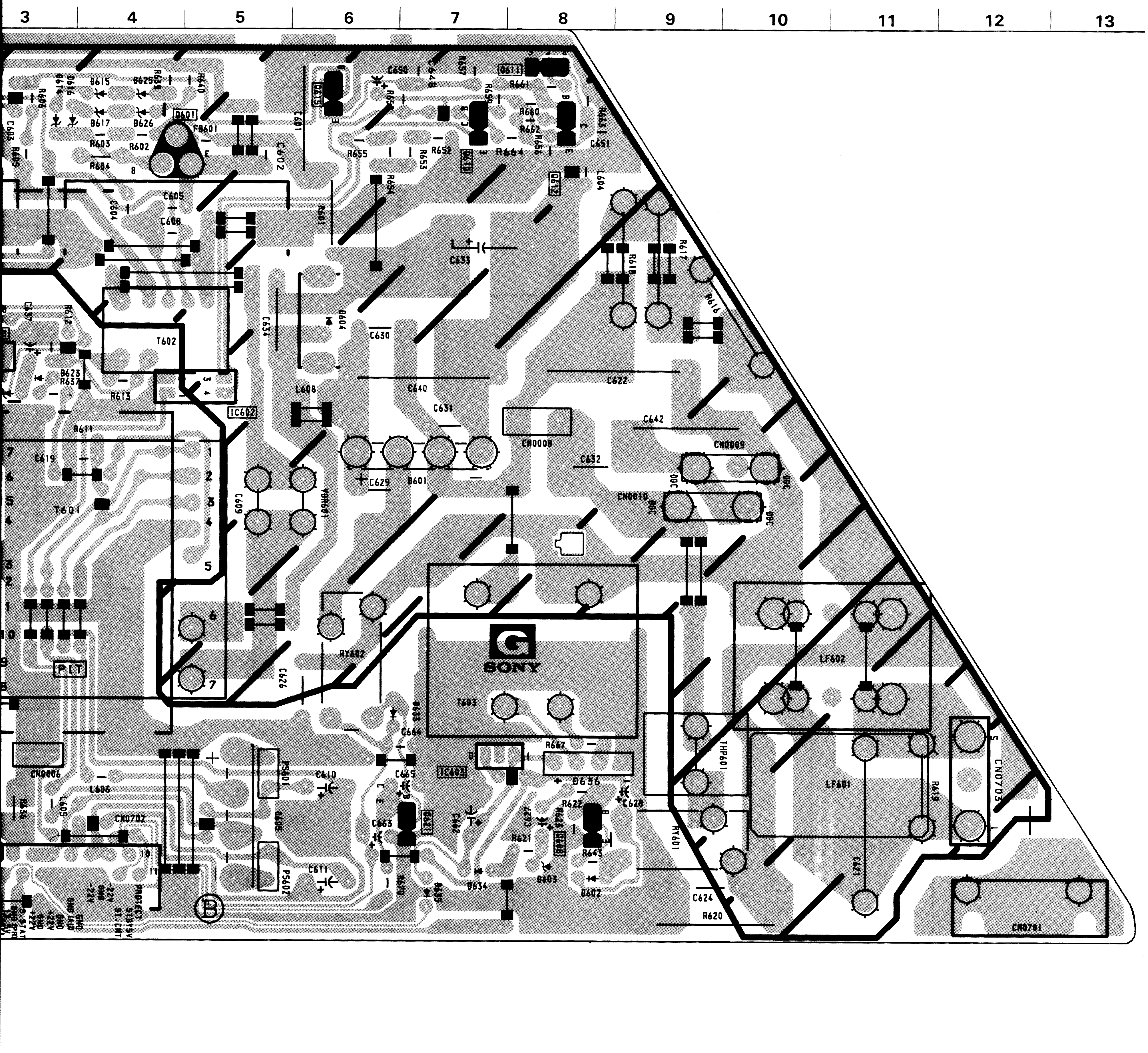
G [POWER SUPPLY]

G Board


1
2
3
4
5
6
A
B
C
D
E
F
G
H
1-663-200-11
(171279011)
T601
T602
IC601
IC602
CN0702
CN0606
PIT
TP1
VBR601
RY602
B

NOTE:

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

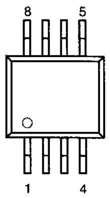

3
4
5
6
7
8
9
10
11
12
13
G
SONY
T603
T602
T601
IC602
IC603
LF602
LF601
CN0701
CN0703
CN0702
CN0006
CN0008
CN0009
CN0010
RY602
RY601
THP601
VDR601
L608
L606
L605
L604
FB601
PIT
C633
C622
C640
C631
C630
C632
C642
C629
C626
C624
C621
C610
C611
C602
C601
C650
C651
R617
R618
R616
R619
R620
R667
PROTECT
ST CNT
ST15V
GND
+22V
-22V
B

G BOARD

IC	
IC601	C-3
IC602	D-5
IC603	G-7
TRANSISTOR	
Q601	A-5
Q602	B-2
Q603	B-2
Q604	B-2
Q605	C-1
Q608	H-8
Q610	B-7
Q611	A-8
Q612	B-8
Q615	A-6
Q621	H-7
DIODE	
D601	E-7
D602	H-8
D603	H-8
D605	H-5
D607	E-2
D608	F-2
D609	G-1
D610	H-3
D611	E-1
D614	A-3
D615	A-4
D616	A-3
D617	A-4
D618	B-1
D619	B-2
D620	B-1
D621	B-2
D622	A-1
D623	D-3
D625	A-4
D626	A-4
D627	B-2
D628	B-2
D630	D-3
D633	G-7
D634	H-7
D636	G-8

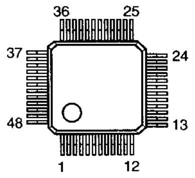
5-4. SEMICONDUCTORS

BA7046F
BA7046F-T1
MB3793-42PNF
MB3793-42PNF-ER
NJM2240M
NJM2240(TE2)



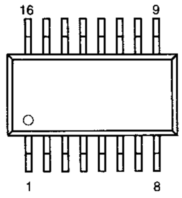
(TOP VIEW)

CXA1855Q-T6


36
25
37
24
48
13
1
12

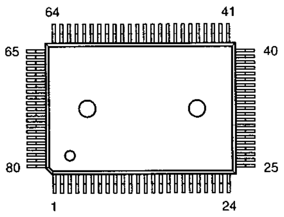
(TOP VIEW)

CXA1875AM-T4
HEF4053BT
MC14052BDR2
MC74F157ADR2
SN74LS33INS
74HCT4046AD



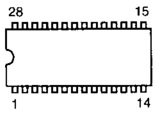
(TOP VIEW)

CXD2044Q
SAA4990H/V2


64
41
65
40
80
25
1
24

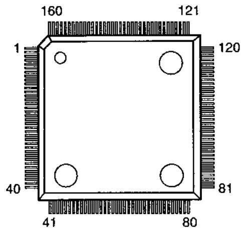
(MARKING SIDE VIEW)

CXD2053S
TDA4780/V3



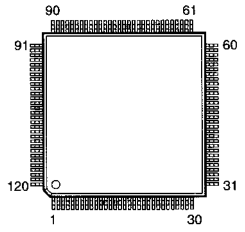
(TOP VIEW)

CXD8624Q


160
121
1
120
40
81
41
80

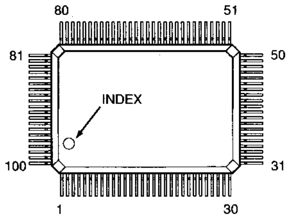
(TOP VIEW)

CXD8625Q


90
61
91
60
120
31
1
30

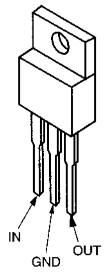
(TOP VIEW)

CXD8626Q

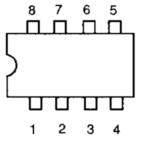

80
51
81
50
INDEX
100
31
1
30

(TOP VIEW)

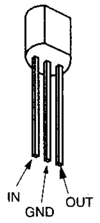
LM2940CT-9.0
LM2940T-8.0
L4941BV
TEA7605



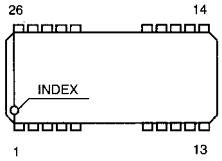
LM393P
M5216P
ST24C16FB6
TDA2822M
UPC393C



LM78L05ACZ
LM78L12ACZ
L78L05ACZ-AP
L78L12ACZ-AP

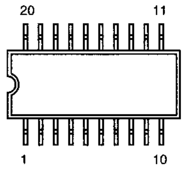


MB814400C-70PJN-ER


26
14
INDEX
1
13

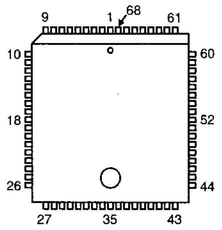
(TOP VIEW)

MC74F240DWR2



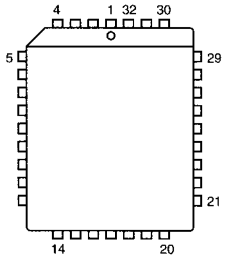
(TOP VIEW)

MSP3400C-PS-C6-T
MSP3410B-PS-F7-T-ND
SAA7185WP
SDA30C164-GEG
SDA5273P-C26-GEG
SDA5275


9
1
68
61
10
60
18
52
26
44
27
35
43

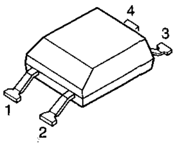
(TOP VIEW)

M27C4001-15C1-AE401

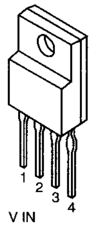

4
1
32
30
5
29
21
14
20

(TOP VIEW)

PC123F2
PC123FY2

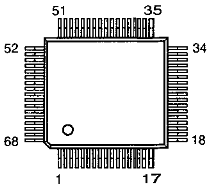


PQ05RF21



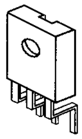
1 : V IN
2 : V OUT
3 : GND
4 : ON/OFF CONTROL

P83C654EBA/560
SDA9280A41

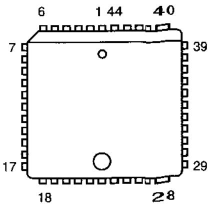

51
35
52
34
68
18
1
17

(TOP VIEW)

SBX1981-51

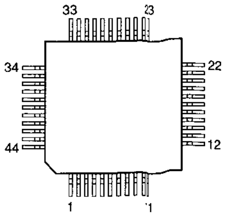


SAA4952WP/V1

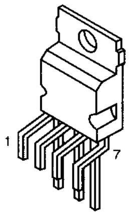

6
1
44
40
7
39
17
29
18
28

(TOP VIEW)

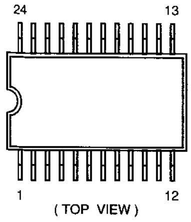
SDA9361


33
23
34
22
44
12
1
11

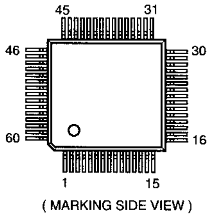
STV9379



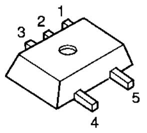
TC9293F-EL


24
13
1
12
(TOP VIEW)

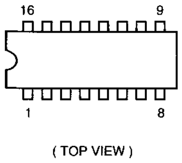
TC9337F-015


45
31
46
30
60
16
1
15
(MARKING SIDE VIEW)

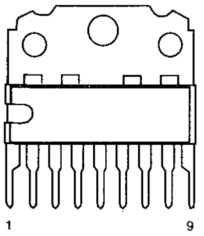
TC4S66F
TC4S66F-TE85L



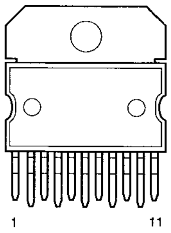
TDA4665T-T


16
9
1
8
(TOP VIEW)

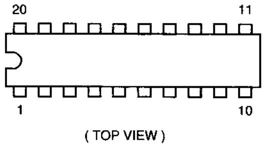
TDA6111Q
TDA6111Q/N4



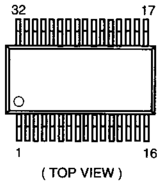
TDA7265



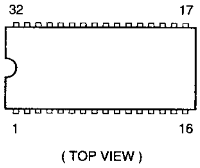
TDA7309


20
11
1
10
(TOP VIEW)

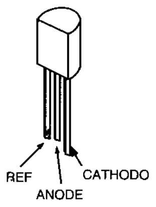
TDA8755T-T


32
17
1
16
(TOP VIEW)

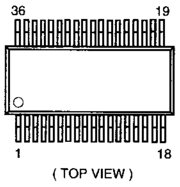
TDA9143/N2
TDA9144/N2
TDA9170T


32
17
1
16
(TOP VIEW)

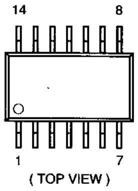
TL431CLP
TL431CLP-Z20
TL431CPS-T1
TL431CZ


REF
CATHODO
ANODE

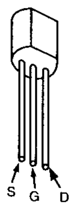
TMS4C2972-26DTR
TMS4C2972-28DTR


36
19
1
18
(TOP VIEW)

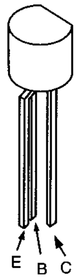
U2860B-BFPG3
74LVC08D


14
8
1
7
(TOP VIEW)

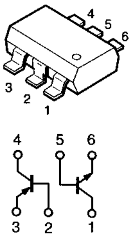
BC546B
BC556B



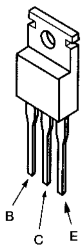
BF199-AMMO



IMZ1A-T109

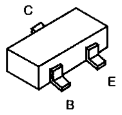

4
5
6
3
2
1
4
5
6
3
2
1

IRF620



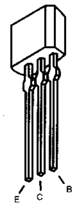
DTA114EK
DTA114EK-T146
DTA144EK
DTA144EK-T146
DTC114EK
DTC114EKA-T146
DTC124EKA-T146

DTC144EK
DTC144EK-T146
DTC144EKA-T146
2SA1037K-T-146-R
2SA1162-G
2SC2412K-QR
2SC2412K-T-146-R

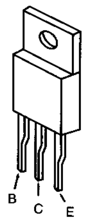


JA101TP-Q
JC501TP-Q
DTA144ESA
DTA144ESA-TP
DTC144ESA-TP
2SA1175-HFE

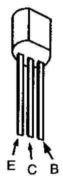
2SA733-K
2SA933AS-RT
2SA933AS-QRT
2SA933S-RT
2SC1740S-RT
2SC2785-HFE



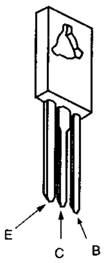
2SA1837



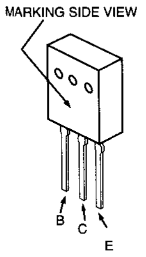
2SC2500-B
2SC2551-O
2SC2552O-TPE2



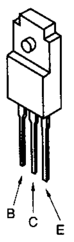
2SC2688-LK



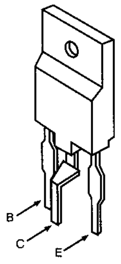
2SC3997CA


MARKING SIDE VIEW
B
C
E

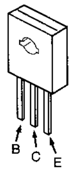
2SC4793



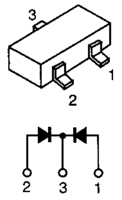
2SC4834NP-F09



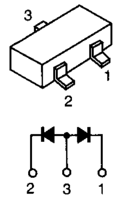
2SD2396H



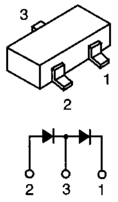
DAN202K
DAN202K-T-146



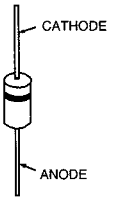
DAP202K
DAP202K-T-146



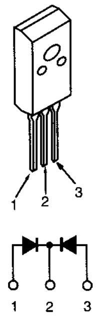
DA204K
DA204K-T-146



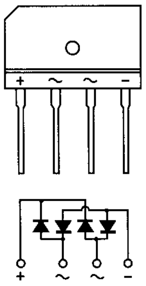
D1NL20
D1NL20-TA
D1NL20-TR
EGP20G
EL1Z
GP08D
GP08DPKG23
MTZJ-T-77-9.1
MTZJ-T-77-9.1A
R2K-V1
RGP02-20EG23
RGP02-20EL-6394
RGP10GPKG23
RGP15GPKG23
S2LA20F
1SS133T-77
1SS83
1SS83TD


CATHODE
ANODE

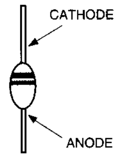
D10SC4M



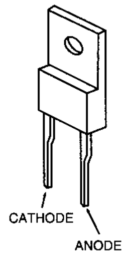
D4SB60L
D4SB60L-F
RBA-402L



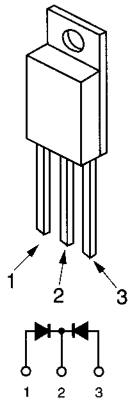
ERC38-06


CATHODE
ANODE

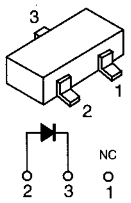
ERD08M-15


CATHODE
ANODE

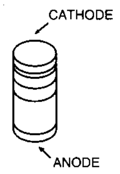
ESAD39M-06C
ESAD39M-06CF38



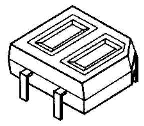
MA3033-L
MA3033L-TX
MA3056M-TX
MA3062M-TX
MA3030-H(TX)
RD5.6M-B2



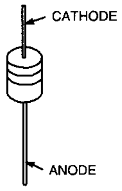
MA3051L-TX


CATHODE
ANODE

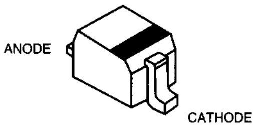
MA73-TX



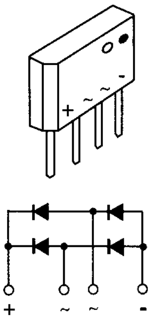
MTZJ-T-77-13B
MTZJ-T-77-15B
MTZJ-T-77-2.2A
MTZJ-T-77-33C
MTZJ-T-77-39C
MTZJ-T-77-5.6B
MTZJ-T-77-9.1B
MTZJ-13B
MTZJ-33C
MTZJ-39C
RD15ES-B2
RD5.6ESB2
RD9.1ESB2
1SS119-25
1SS119-25TD


CATHODE
ANODE

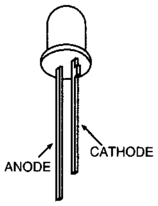
RD12SB2
UDZ-TE-17-12B


ANODE
CATHODE

S1VB20-S
S1VB40

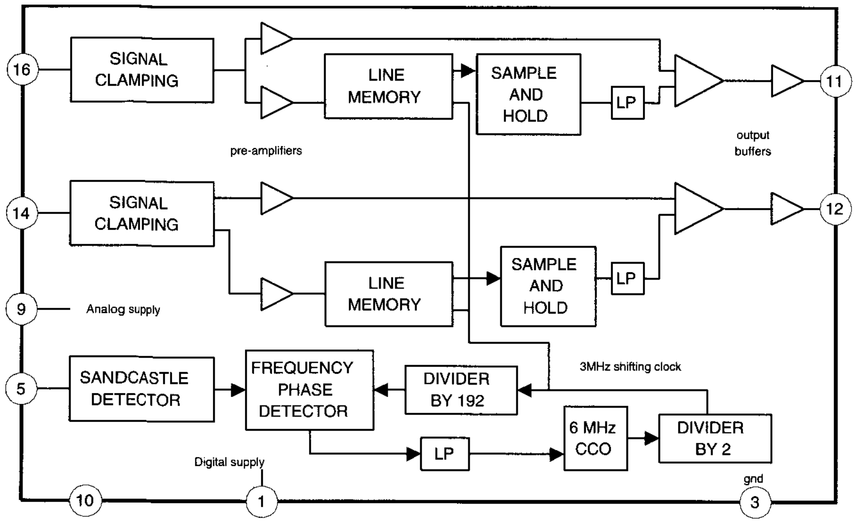


SLA-570KT3F

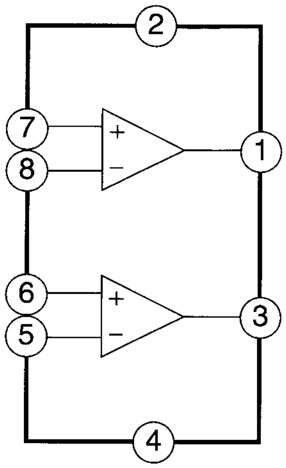

ANODE
CATHODE

5-5. IC BLOCK DIAGRAMS

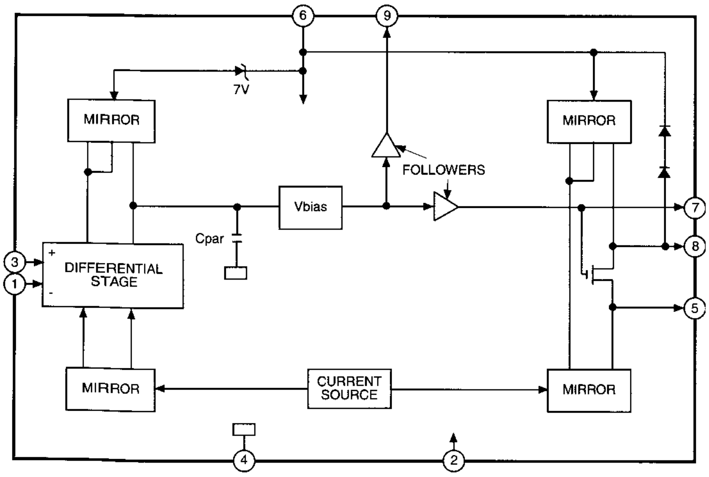
A Board IC303, TDA4665T-T


SIGNAL CLAMPING
LINE MEMORY
SAMPLE AND HOLD
LP
pre-amplifiers
output buffers
SIGNAL CLAMPING
LINE MEMORY
SAMPLE AND HOLD
LP
Analog supply
SANDCASTLE DETECTOR
FREQUENCY PHASE DETECTOR
DIVIDER BY 192
3MHz shifting clock
6 MHz CCO
DIVIDER BY 2
LP
Digital supply
gnd
16
14
9
5
10
1
3
11
12

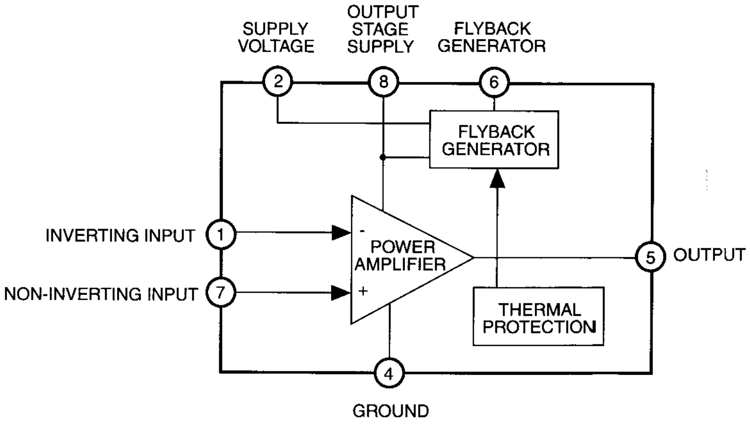
D Board IC261 TDA2822



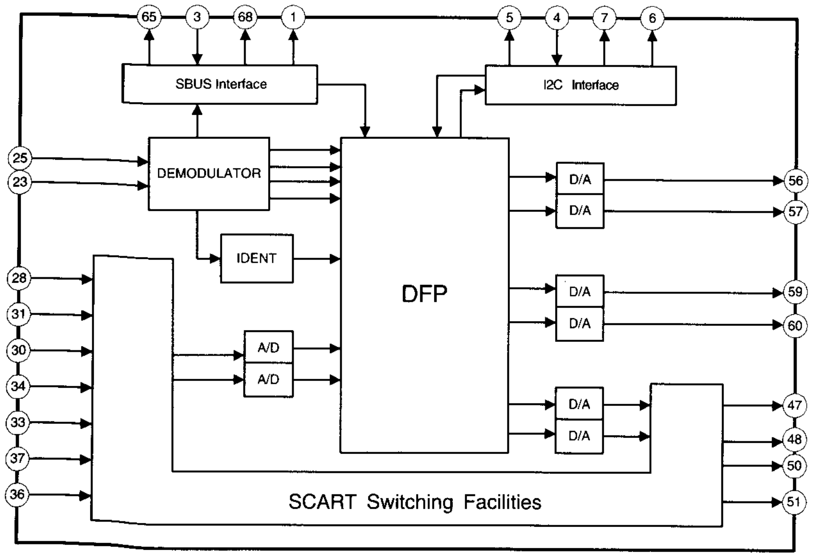
C Board IC703,704,705 TDA6111Q/N4


6
9
7V
MIRROR
MIRROR
FOLLOWERS
Vbias
Cpar
DIFFERENTIAL STAGE
+
-
3
1
7
8
5
MIRROR
CURRENT SOURCE
MIRROR
4
2

D Board IC802 STV9379


SUPPLY VOLTAGE
OUTPUT STAGE SUPPLY
FLYBACK GENERATOR
2
8
6
FLYBACK GENERATOR
INVERTING INPUT
1
NON-INVERTING INPUT
7
POWER AMPLIFIER
-
+
5
OUTPUT
THERMAL PROTECTION
4
GROUND

A Board IC201 MSP3400C-PS-C6-T/MSP3410B-PS-F7-T


65
3
68
1
5
4
7
6
SBUS Interface
I2C Interface
DEMODULATOR
25
23
IDENT
DFP
A/D
A/D
D/A
D/A
D/A
D/A
D/A
D/A
56
57
59
60
47
48
50
51
28
31
30
34
33
37
36
SCART Switching Facilities

SECTION 6
EXPLODED VIEWS

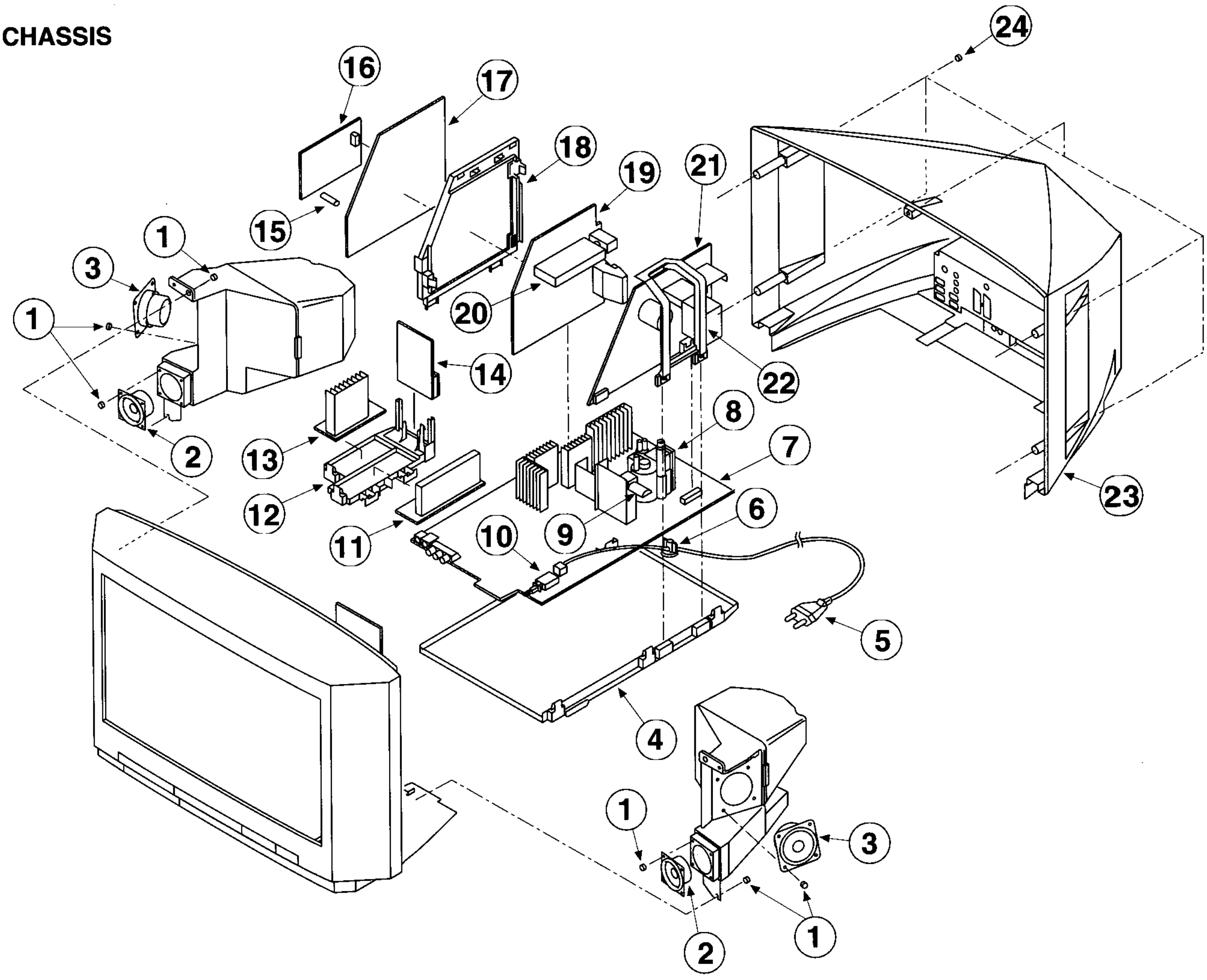
NOTE :

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remarks column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and marked ⚠ are critical for safety.
Replace only with the part number specified.

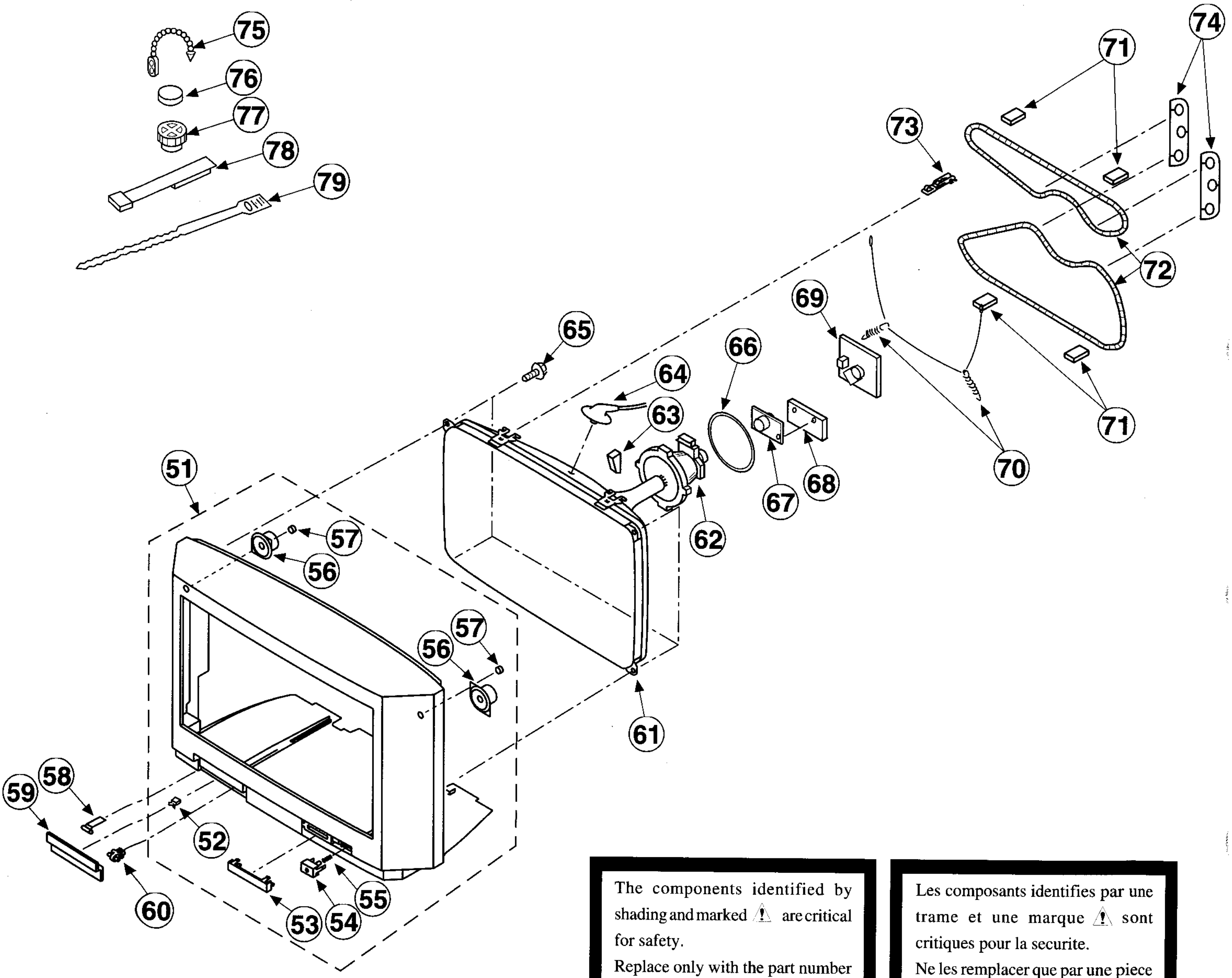
Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

6-1. CHASSIS



REF NO	PART NO	DESCRIPTION	REMARK
1	4-039-355-11	SCREW(4X12), (+) BV TAPPING	
2	1-505-154-11	SPEAKER (6.5CM)	
3	1-505-155-11	SPEAKER (10CM)	
4	*4-203-457-01	BRACKET, MAIN	
5	⚠ 1-751-680-11	CORD, POWER (WITH NOISE FILTER) 2.5A/250V	
6	⚠ *4-202-531-01	AC CORD LOCK (SC)	
7	*A-1640-244-A	D BOARD, COMPLETE	
8	⚠ 1-453-222-11	TRANSFORMER ASSY, FLYBACK (NX-4003/U2B4)	
9	*4-203-609-01	HOLDER, G	
10	⚠ 1-571-433-21	SWITCH, PUSH (AC POWER)	
11	*A-1652-042-A	T BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	*A-1652-044-A	T BOARD, COMPLETE (KV-28WS4B)	
12	*4-203-537-01	BRACKET, J-K-T	
13	*A-1649-015-A	K BOARD, COMPLETE	
14	*A-1651-083-A	J1 BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	*A-1651-089-A	J1 BOARD, COMPLETE (KV-28WS4B)	
15	*4-203-568-01	HOLDER, PCB (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
16	*A-1626-007-A	Q BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
17	*A-1620-077-A	B BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	*A-1620-084-A	B BOARD, COMPLETE (KV-28WS4B)	
18	*4-203-612-01	BRACKET, A-B	
19	*A-1632-563-A	A BOARD, COMPLETE (KV-28WS4A)	
	*A-1632-562-A	A BOARD, COMPLETE (KV-28WS4B)	
	*A-1632-493-A	A BOARD, COMPLETE (KV-28WS4D)	
	*A-1632-564-A	A BOARD, COMPLETE (KV-28WS4E)	
	*A-1632-565-A	A BOARD, COMPLETE (KV-28WS4K)	
	*A-1632-566-A	A BOARD, COMPLETE (KV-28WS4R)	
20	1-693-338-21	TUNER/VIF (AEP) (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	1-693-340-21	TUNER/VIF (FR) (KV-28WS4B)	
21	*A-1636-018-A	G BOARD, COMPLETE	
22	*4-203-613-01	SUPPORTER, G	
23	4-203-543-11	COVER, REAR	
24	4-039-358-01	SCREW (4X16), (+) BV TAPPING	

6-2. PICTURE TUBE



The components identified by shading and marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF NO	PART NO	DESCRIPTION	REMARK
51	A-1603-043-A	BEZNET ASSY	52-57
52	4-047-464-01	CATCHER PUSH	
53	4-203-539-01	WINDOW ORNAMENTAL	
54	4-203-540-01	BUTTON, POWER	
55	4-202-964-01	SPRING	
56	1-504-418-21	SPEAKER (5CM)	
57	4-039-356-01	SCREW(3X12), (+) BV TAPPING	
58	4-045-250-01	DAMPER	
59	4-203-542-01	DOOR, CONTROL	
60	4-202-555-01	SHAFT, DOOR	
[illegible]	8-737-763-05	PICTURE TUBE (9D-284T) (W66LGV011X)	
[illegible]	8-451-438-11	DEFLECTION YOKE (Y28G1CM)	
63	3-704-495-01	SPACER, DY	
[illegible]	1-251-317-31	CAP ASSY, HIGH-VOLTAGE	
65	4-036-188-01	SCREW (M), PT	
66	1-452-724-22	COIL, NA ROTATION (RT-165)	

REF NO		PART NO	DESCRIPTION	REMARK
67	⚠	8-451-005-31	NECK ASSY PICTURE TUBE (NA89T-[illegible]	
68		*A-1644-075-A	VM BOARD, COMPLETE	
69		*A-1638-092-A	C BOARD, COMPLETE	
70		4-369-318-31	SPRING, TENSION	
71		*4-203-390-01	CUSHION, DGC	
72	⚠	1-411-893-11	COIL DEGAUSSING	
73		4-202-463-01	CLIP, DGC (25")	
74		*4-050-252-01	SPACER, DGC	
75		4-308-870-00	CLIP, LEAD WIRE	
76		1-452-032-00	MAGNET, DISK; 10MM 0	
77		1-452-094-00	MAGNET, ROTATABLE DISK; 15MM 0	
78		X-4387-214-1	PERMALLOY ASSY, CORRECTION	
79		3-701-007-00	BAND, BINDING	

SECTION 7

ELECTRICAL PARTS LIST

The components identified by shading and marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

When indicating parts by reference number, please include the board name.

CAPACITORS	COILS
MF : mF, PF : mmF	MMH : mH, μH : mH

B

REF.NO.	PART NO.	DESCRIPTION		REMARK
	*A-1620-077-A	B BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R) ******************		
	*A-1620-084-A	B BOARD, COMPLETE (KV-28WS4B) ******************		
		< CAPACITOR >		
C407	1-126-969-11	ELECT 220MF	20%	50V
C408	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C409	1-162-638-11	CERAMIC CHIP 1MF		16V
C410	1-162-638-11	CERAMIC CHIP 1MF		16V
C411	1-162-638-11	CERAMIC CHIP 1MF		16V
C412	1-163-037-11	CERAMIC CHIP 0.022MF	10%	50V
C413	1-163-037-11	CERAMIC CHIP 0.022MF	10%	50V
C414	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C415	1-162-638-11	CERAMIC CHIP 1MF		16V
C416	1-162-638-11	CERAMIC CHIP 1MF		16V
C417	1-162-638-11	CERAMIC CHIP 1MF		16V
C418	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C419	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C420	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C421	1-162-568-11	CERAMIC CHIP 0.33MF	10%	16V
C422	1-162-638-11	CERAMIC CHIP 1MF		16V
C427	1-126-963-11	ELECT 4.7MF	20%	50V
C428	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C429	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C430	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C431	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C432	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C433	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C434	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C435	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V
C438	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C439	1-126-964-11	ELECT 10MF	20%	50V
C440	1-126-964-11	ELECT 10MF	20%	50V
C441	1-163-037-11	CERAMIC CHIP 0.022MF	10%	50V
C443	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C444	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C445	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C446	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C449	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C450	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C451	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C452	1-163-103-00	CERAMIC CHIP 27PF	5%	50V
C453	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C454	1-162-568-11	CERAMIC CHIP 0.33MF	10%	16V
C455	1-126-964-11	ELECT 10MF	20%	50V
C458	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C460	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1800	1-126-963-11	ELECT 4.7MF	20%	50V
C1801	1-126-963-11	ELECT 4.7MF	20%	50V
C1802	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C1803	1-126-964-11	ELECT 10MF	20%	50V
C1804	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1805	1-164-489-11	CERAMIC CHIP 0.22MF	10%	16V
C1806	1-110-501-11	CERAMIC CHIP 0.33MF	10%	16V
C1807	1-126-963-11	ELECT 4.7MF	20%	50V
C1808	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C1809	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C1810	1-162-638-11	CERAMIC CHIP 1MF		16V
C1811	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1812	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1813	1-164-489-11	CERAMIC CHIP 0.22MF	10%	16V
C1814	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C1815	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C1816	1-126-963-11	ELECT 4.7MF	20%	50V
C1817	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1818	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1819	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1823	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1824	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1825	1-126-964-11	ELECT 10MF	20%	50V
C1826	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1827	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1828	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C1829	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1830	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1831	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C1832	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1833	1-126-964-11	ELECT 10MF	20%	50V
C1834	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1835	1-164-489-11	CERAMIC CHIP 0.22MF	10%	16V
C1836	1-110-501-11	CERAMIC CHIP 0.33MF	10%	16V
C1839	1-126-963-11	ELECT 4.7MF	20%	50V
C1840	1-162-638-11	CERAMIC CHIP 1MF		16V
C1841	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1842	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1843	1-164-489-11	CERAMIC CHIP 0.22MF	10%	16V
C1846	1-126-963-11	ELECT 4.7MF	20%	50V
C1847	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1848	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V

B

REF.NO.	PART NO.	DESCRIPTION		REMARK
C1849	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1850	1-163-107-00	CERAMIC CHIP 39PF	5%	50V
C1851	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1852	1-164-005-11	CERAMIC CHIP 0.47MF		16V
C1853	1-163-121-00	CERAMIC CHIP 150PF	5%	50V
C1854	1-164-005-11	CERAMIC CHIP 0.47MF		16V
C1855	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1856	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C1857	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C1858	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C1859	1-164-005-11	CERAMIC CHIP 0.47MF		16V
C1860	1-126-961-11	ELECT 2.2MF	20%	50V
C1861	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1862	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1864	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C1865	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1866	1-126-964-11	ELECT 10MF	20%	50V
C1867	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1868	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1869	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1870	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1871	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1872	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1873	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1874	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1875	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1876	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C1877	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C1878	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1879	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1880	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1881	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1882	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1883	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1884	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1885	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1886	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1887	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1889	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1890	1-126-964-11	ELECT 10MF	20%	50V
C1891	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1892	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1893	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1894	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1897	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1898	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1899	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C1903	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1904	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V
C1910	1-126-964-11	ELECT 10MF	20%	50V
C1912	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1921	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C1922	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C1924	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1925	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1926	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1927	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1928	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1931	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1932	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V

REF.NO.	PART NO.	DESCRIPTION		REMARK
C1933	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C1935	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
JR426	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
R1824	1-164-049-11	CERAMIC 13PF	5%	50V
R1839	1-126-963-11	ELECT 4.7MF	20%	50V
		< CONNECTOR >		
CN412	*1-564-513-11	PLUG, CONNECTOR 10P		
CN413	*1-564-511-11	PLUG, CONNECTOR 8P		
CN417	*1-564-596-11	PLUG, CONNECTOR 15P		
CN419	*1-564-512-11	PLUG, CONNECTOR 9P		
CN1810	*1-564-512-11	PLUG, CONNECTOR 9P		
CN1813	1-778-822-11	CONNECTOR, BOARD TO BOARD 40P		
CN1815	*1-564-512-11	PLUG, CONNECTOR 9P		
		< DIODE >		
D401	8-719-914-43	DIODE DAN202K		
D402	8-719-914-43	DIODE DAN202K		
D403	8-719-028-00	DIODE MA3033L		
D410	8-719-401-63	DIODE MA3062M-TX		
D411	8-719-914-43	DIODE DAN202K		
D412	8-719-914-43	DIODE DAN202K		
D414	8-719-914-42	DIODE DA204K		
D415	8-719-914-43	DIODE DAN202K		
		< FERRITE BEAD >		
FB401	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB402	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB403	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB404	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB405	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB406	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB407	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1801	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1802	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1803	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1804	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1805	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1806	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1807	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1808	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1809	1-414-234-11	INDUCTOR, FERRITE BEAD		
FB1810	1-414-234-11	INDUCTOR, FERRITE BEAD		
		< ENCAPSULATED FILTER >		
FL1801	1-233-767-11	FILTER		
FL1803	1-415-940-11	DELAY LINE		
FL1807	1-236-071-11	ENCAPSULATED COMPONENT		
FL1808	1-236-071-11	ENCAPSULATED COMPONENT		
		< IC >		
IC402	8-759-275-36	IC TDA4780/V3		
IC403	8-759-421-42	IC SDA9361		
IC405	8-759-438-33	IC 74LVC08D		
IC406	8-759-439-64	IC HEF4053BT		
IC1801	8-759-257-59	IC TDA8755T-T		
IC1803	8-759-439-27	IC TMS4C2972-26DTR		
IC1804	8-759-439-64	IC HEF4053BT		
IC1805	8-759-439-64	IC HEF4053BT		

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC1806	8-759-439-64	IC HEF4053BT	
IC1807	8-759-439-64	IC HEF4053BT	
IC1808	8-759-439-62	IC SAA4990H/V2	
IC1809	8-759-438-63	IC SDA9280A41	
IC1810	8-759-438-66	IC CXD8626Q	
IC1811	8-759-257-59	IC TDA8755T-T	
IC1812	8-759-426-57	IC 74HCT4046AD	
IC1813	8-759-426-57	IC 74HCT4046AD	
IC1814	8-759-438-64	IC SAA4952WP/V1	
IC1815	8-759-426-57	IC 74HCT4046AD	
IC1816	8-759-444-25	IC P83C654EBA/560	
IC1817	8-759-439-27	IC TMS4C2972-28DTR	
IC1819	8-759-991-41	IC LM78L05ACZ	
IC1821	8-759-439-64	IC HEF4053BT	
IC1822	8-759-439-64	IC HEF4053BT	
IC1823	8-759-991-41	IC LM78L05ACZ	
IC1824	8-759-991-41	IC LM78L05ACZ	
IC1825	8-759-234-77	IC TC4S66F-TE85L	
IC1831	8-759-907-81	IC SN74LS221NS	
		< COIL >	
L401	1-408-429-00	INDUCTOR 470UH	
L402	1-408-429-00	INDUCTOR 470UH	
L407	1-410-999-11	INDUCTOR CHIP 3.3UH	
L1801	1-410-435-21	INDUCTOR 220UH	
L1802	1-410-435-21	INDUCTOR 220UH	
L1803	1-408-403-00	INDUCTOR 3.3UH	
L1804	1-408-409-00	INDUCTOR 10UH	
L1805	1-410-999-11	INDUCTOR CHIP 3.3UH	
L1810	1-410-427-11	INDUCTOR 4.7UH	
L1811	1-408-403-00	INDUCTOR 3.3UH	
L1812	1-408-403-00	INDUCTOR 3.3UH	
L1813	1-408-403-00	INDUCTOR 3.3UH	
		< TRANSISTOR >	
Q411	8-729-901-06	TRANSISTOR DTA144EK	
Q412	8-729-901-06	TRANSISTOR DTA144EK	
Q415	8-729-900-53	TRANSISTOR DTC114EKA-T146	
Q416	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1801	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1802	8-729-901-01	TRANSISTOR DTC144EK	
Q1804	8-729-901-01	TRANSISTOR DTC144EK	
Q1805	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1807	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1808	8-729-901-01	TRANSISTOR DTC144EK	
Q1809	8-729-901-01	TRANSISTOR DTC144EK	
Q1810	8-729-901-01	TRANSISTOR DTC144EK	
Q1812	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1813	8-729-900-53	TRANSISTOR DTC114EKA	
		< RESISTOR >	
C1916	1-216-043-91	METAL GLAZE 560 5% 1/10W	
L1806	1-216-295-91	METAL GLAZE 0 5% 1/10W	
L1807	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR409	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR417	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR418	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR420	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR421	1-216-295-91	METAL GLAZE 0 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
JR422	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR423	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR424	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1801	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1802	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1803	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1804	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1805	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1806	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1807	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1808	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1809	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1810	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1811	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1812	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1840	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1841	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1843	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4B)
JR1859	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1860	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1861	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1862	1-216-043-91	METAL GLAZE 560 5% 1/10W	
JR1863	1-216-043-91	METAL GLAZE 560 5% 1/10W	
JR1864	1-216-043-91	METAL GLAZE 560 5% 1/10W	
JR1875	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1890	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1893	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
JR1894	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1896	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1897	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1898	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1899	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1901	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1904	1-216-029-00	METAL GLAZE 150 5% 1/10W	
JR1905	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1910	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1911	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R408	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R409	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R439	1-216-093-00	METAL GLAZE 68K 5% 1/10W	
R443	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R444	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R445	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R446	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R447	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R448	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R449	1-216-049-91	METAL GLAZE 1K 5% 1/10W	

B

REF.NO.	PART NO.	DESCRIPTION	REMARK
R450	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R451	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R452	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R453	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R454	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R455	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	
R456	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R457	1-216-099-00	METAL GLAZE 120K 5% 1/10W	
R458	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R459	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R463	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R465	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R466	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R467	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R468	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R469	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R470	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R473	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R477	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R483	1-216-063-91	METAL GLAZE 3.9K 5% 1/10W	
R484	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R492	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R1801	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R1802	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1803	1-216-296-91	METAL GLAZE 0 5% 1/8W	
R1804	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R1805	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1806	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R1807	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1808	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1810	1-216-076-00	METAL GLAZE 13K 5% 1/10W	
R1811	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1812	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1813	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R1814	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R1815	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1816	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1817	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1818	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1819	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1820	1-216-029-00	METAL GLAZE 150 5% 1/10W	
R1821	1-216-023-00	METAL GLAZE 82 5% 1/10W	
R1822	1-216-296-91	METAL GLAZE 0 5% 1/8W	
R1823	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R1826	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R1827	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1828	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R1829	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1830	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1831	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R1832	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1833	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R1834	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R1835	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1836	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R1837	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R1838	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R1840	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R1841	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R1842	1-216-115-00	METAL GLAZE 560K 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R1843	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1844	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R1845	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1846	1-216-056-00	METAL GLAZE 2K 5% 1/10W	
R1847	1-216-115-00	METAL GLAZE 560K 5% 1/10W	
R1848	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1849	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R1850	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1851	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1852	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1853	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1854	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1855	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1856	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1857	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1858	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1859	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R1860	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R1861	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1864	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R1865	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1866	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R1867	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R1868	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R1869	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1870	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1871	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R1872	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R1873	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1874	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R1875	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1876	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R1877	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1878	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1879	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1880	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R1881	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1882	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R1885	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1886	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1888	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R1890	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1891	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1892	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1893	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1894	1-216-047-91	METAL GLAZE 820 5% 1/10W	
R1895	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1896	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R1897	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1898	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1899	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R1900	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1901	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1902	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1903	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1904	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1905	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1906	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1907	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1908	1-216-097-91	METAL GLAZE 100K 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R1909	1-216-097-91	METAL GLAZE 100K 5%	1/10W
R1910	1-216-097-91	METAL GLAZE 100K 5%	1/10W
R1911	1-216-097-91	METAL GLAZE 100K 5%	1/10W
R1912	1-216-097-91	METAL GLAZE 100K 5%	1/10W
R1914	1-216-059-00	METAL GLAZE 2.7K 5%	1/10W
R1915	1-216-063-91	METAL GLAZE 3.9K 5%	1/10W
R1920	1-216-295-91	METAL GLAZE 0 5%	1/10W
R1921	1-216-295-91	METAL GLAZE 0 5%	1/10W
R1922	1-216-025-91	METAL GLAZE 100 5%	1/10W
R1923	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R1924	1-216-083-00	METAL GLAZE 27K 5%	1/10W
R1930	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R1931	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R1932	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R1933	1-216-053-00	METAL GLAZE 1.5K 5%	1/10W

< CRYSTAL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
X401	1-767-343-21	VIBRATOR, CRYSTAL (24.576MHz)	
X1801	1-579-175-11	VIBRATOR, CERAMIC (10MHz)	

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*A-1626-007-A Q BOARD, COMPLETE (KV-28WS4A/28WS4D/
***************** 28WS4E/28WS4K/
28WS4R)

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
C1	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C2	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C4	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C6	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C7	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C8	1-104-664-11	ELECT 47MF 20%	16V
C9	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C10	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C11	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C12	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C13	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C14	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C15	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C16	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C20	1-163-077-00	CERAMIC CHIP 0.1MF	50V
C21	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C22	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C23	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C24	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C25	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C26	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C27	1-126-965-11	ELECT 22MF 20%	50V
C28	1-126-941-11	ELECT 470MF 20%	16V
C29	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C33	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C34	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C36	1-164-232-11	CERAMIC CHIP 0.01MF 10%	50V
C37	1-124-120-11	ELECT 220MF 20%	16V
C38	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C39	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C40	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C41	1-164-004-11	CERAMIC CHIP 0.1MF 10%	25V
C42	1-165-319-11	CERAMIC CHIP 0.1MF	50V
C43	1-165-319-11	CERAMIC CHIP 0.1MF	50V
C44	1-165-319-11	CERAMIC CHIP 0.1MF	50V
C45	1-165-319-11	CERAMIC CHIP 0.1MF	50V
C46	1-165-319-11	CERAMIC CHIP 0.1MF	50V
C47	1-165-319-11	CERAMIC CHIP 0.1MF	50V

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
CN1	1-778-823-11	CONNECTOR, BOARD TO BOARD 40P	
CN3	*1-564-520-11	PLUG, CONNECTOR 5P	

< IC >

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC1	8-759-432-35	IC MC74F240DWR2	
IC2	8-759-432-94	IC CXD8625Q	
IC3	8-759-432-95	IC CXD8624Q	
IC4	8-759-439-27	IC TMS4C2972-28DTR	
IC5	8-759-432-96	IC MC74F157ADR2	
IC6	8-759-439-27	IC TMS4C2972-28DTR	
IC7	8-759-376-88	IC SAA7185WP	
IC8	8-759-908-15	IC TL431CLP	
IC9	8-759-432-96	IC MC74F157ADR2	
IC10	8-759-432-96	IC MC74F157ADR2	
IC11	8-759-432-96	IC MC74F157ADR2	
IC12	8-759-432-96	IC MC74F157ADR2	

< COIL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
L1	1-408-409-00	INDUCTOR 10UH	
L3	1-408-409-00	INDUCTOR 10UH	

< TRANSISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q1	8-729-032-65	TRANSISTOR 2SD2396H	

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
C18	1-216-295-91	METAL GLAZE 0 5%	1/10W
R1	1-216-025-91	METAL GLAZE 100 5%	1/10W
R2	1-216-025-91	METAL GLAZE 100 5%	1/10W
R5	1-216-295-91	METAL GLAZE 0 5%	1/10W
R6	1-216-295-91	METAL GLAZE 0 5%	1/10W
R7	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R8	1-216-049-91	METAL GLAZE 1K 5%	1/10W
R9	1-216-049-91	METAL GLAZE 1K 5%	1/10W
R10	1-216-295-91	METAL GLAZE 0 5%	1/10W
R11	1-216-295-91	METAL GLAZE 0 5%	1/10W
R12	1-216-295-91	METAL GLAZE 0 5%	1/10W
R14	1-216-049-91	METAL GLAZE 1K 5%	1/10W
R15	1-216-295-91	METAL GLAZE 0 5%	1/10W
R17	1-216-049-91	METAL GLAZE 1K 5%	1/10W
R18	1-216-077-00	METAL GLAZE 15K 5%	1/10W
R19	1-216-295-91	METAL GLAZE 0 5%	1/10W
R20	1-216-295-91	METAL GLAZE 0 5%	1/10W
R21	1-216-003-11	METAL GLAZE 12 5%	1/10W
R22	1-216-008-11	METAL GLAZE 20 5%	1/10W
R23	1-216-008-11	METAL GLAZE 20 5%	1/10W
R24	1-216-295-91	METAL GLAZE 0 5%	1/10W
R25	1-216-295-91	METAL GLAZE 0 5%	1/10W
R29	1-216-073-00	METAL GLAZE 10K 5%	1/10W
R32	1-216-295-91	METAL GLAZE 0 5%	1/10W
R33	1-216-295-91	METAL GLAZE 0 5%	1/10W
R34	1-216-295-91	METAL GLAZE 0 5%	1/10W
R35	1-216-295-91	METAL GLAZE 0 5%	1/10W
R36	1-216-295-91	METAL GLAZE 0 5%	1/10W
R37	1-216-295-91	METAL GLAZE 0 5%	1/10W

Q **A**

REF.NO.	PART NO.	DESCRIPTION			REMARK
R38	1-216-295-91	METAL GLAZE	0	5%	1/10W
R39	1-216-295-91	METAL GLAZE	0	5%	1/10W
R40	1-216-295-91	METAL GLAZE	0	5%	1/10W
R41	1-216-295-91	METAL GLAZE	0	5%	1/10W
R42	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R43	1-216-295-91	METAL GLAZE	0	5%	1/10W
R44	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R45	1-216-013-00	METAL GLAZE	33	5%	1/10W
R46	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R47	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R48	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R52	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R53	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R54	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R55	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R56	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R57	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R58	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R59	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R60	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R61	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R62	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R63	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R64	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R65	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R66	1-216-295-91	METAL GLAZE	0	5%	1/10W
R68	1-216-027-00	METAL GLAZE	120	5%	1/10W
R69	1-216-001-00	METAL GLAZE	10	5%	1/10W
R70	1-216-030-00	METAL GLAZE	160	5%	1/10W
R71	1-216-041-00	METAL GLAZE	470	5%	1/10W
R87	1-216-295-91	METAL GLAZE	0	5%	1/10W
R89	1-216-001-00	METAL GLAZE	10	5%	1/10W
R90	1-216-001-00	METAL GLAZE	10	5%	1/10W
R91	1-216-295-91	METAL GLAZE	0	5%	1/10W
R92	1-216-295-91	METAL GLAZE	0	5%	1/10W
R93	1-216-295-91	METAL GLAZE	0	5%	1/10W
R94	1-216-295-91	METAL GLAZE	0	5%	1/10W

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*A-1632-563-A A BOARD, COMPLETE (KV-28WS4A)
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*A-1632-562-A A BOARD, COMPLETE (KV-28WS4B)
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*A-1632-493-A A BOARD, COMPLETE (KV-28WS4D)
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*A-1632-564-A A BOARD, COMPLETE (KV-28WS4E)
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*A-1632-565-A A BOARD, COMPLETE (KV-28WS4K)
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*A-1632-566-A A BOARD, COMPLETE (KV-28WS4R)
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< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION			REMARK
C101	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (KV-28WS4B)
C105	1-126-965-11	ELECT	22MF	20%	50V
C111	1-124-907-11	ELECT	10MF	20%	50V
C112	1-164-346-11	CERAMIC CHIP	1MF		16V
C114	1-164-346-11	CERAMIC CHIP	1MF		16V
C116	1-104-664-11	ELECT	47MF	20%	16V
C117	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C118	1-104-664-11	ELECT	47MF	20%	16V
C119	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C120	1-124-907-11	ELECT	10MF	20%	50V
C121	1-164-299-11	CERAMIC CHIP	0.22MF	10%	25V
C122	1-164-346-11	CERAMIC CHIP	1MF		16V
C126	1-104-664-11	ELECT	47MF	20%	16V
C127	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C128	1-104-664-11	ELECT	47MF	20%	16V
C129	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C130	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C131	1-164-346-11	CERAMIC CHIP	1MF		16V
C132	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C133	1-164-346-11	CERAMIC CHIP	1MF		16V
C134	1-124-907-11	ELECT	10MF	20%	50V
C135	1-164-299-11	CERAMIC CHIP	0.22MF	10%	25V
C136	1-124-907-11	ELECT	10MF	20%	50V
C137	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C138	1-126-964-11	ELECT	10MF	20%	50V
C139	1-164-346-11	CERAMIC CHIP	1MF		16V
C140	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C141	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C143	1-163-113-00	CERAMIC CHIP	68PF	5%	50V (KV-28WS4B)
C144	1-163-237-11	CERAMIC CHIP	27PF	5%	50V (KV-28WS4B)
C145	1-163-113-00	CERAMIC CHIP	68PF	5%	50V (KV-28WS4B)
C146	1-164-346-11	CERAMIC CHIP	1MF		16V
C150	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C151	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C152	1-124-907-11	ELECT	10MF	20%	50V
C153	1-110-501-11	CERAMIC CHIP	0.33MF	10%	16V
C154	1-110-501-11	CERAMIC CHIP	0.33MF	10%	16V
C155	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C156	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C157	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C159	1-164-505-11	CERAMIC CHIP	2.2MF		16V
C160	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C162	1-164-346-11	CERAMIC CHIP	1MF		16V
C163	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C164	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C165	1-164-346-11	CERAMIC CHIP	1MF		16V
C166	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C167	1-164-222-11	CERAMIC CHIP	0.22MF		25V
C200	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C201	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C202	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C203	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C204	1-162-568-11	CERAMIC CHIP	0.33MF	10%	16V
C205	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C206	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C207	1-110-501-11	CERAMIC CHIP	0.33MF	10%	16V
C208	1-110-501-11	CERAMIC CHIP	0.33MF	10%	16V
C209	1-110-501-11	CERAMIC CHIP	0.33MF	10%	16V
C210	1-110-501-11	CERAMIC CHIP	0.33MF	10%	16V
C211	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C212	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C213	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C214	1-164-506-11	CERAMIC CHIP	4.7MF		16V
C215	1-164-506-11	CERAMIC CHIP	4.7MF		16V

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REF.NO.	PART NO.	DESCRIPTION		REMARK
C216	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C217	1-124-907-11	ELECT 10MF	20%	50V
C218	1-124-907-11	ELECT 10MF	20%	50V
C219	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C220	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C221	1-163-275-11	CERAMIC CHIP 0.001MF	5%	50V
C222	1-163-275-11	CERAMIC CHIP 0.001MF	5%	50V
C223	1-163-275-11	CERAMIC CHIP 0.001MF	5%	50V
C224	1-163-275-11	CERAMIC CHIP 0.001MF	5%	50V
C227	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C228	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C229	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C230	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C231	1-163-087-00	CERAMIC CHIP 4PF	0.25PF	50V
C232	1-163-087-00	CERAMIC CHIP 4PF	0.25PF	50V
C233	1-163-243-11	CERAMIC CHIP 47PF	5%	50V
C234	1-163-243-11	CERAMIC CHIP 47PF	5%	50V
C303	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C304	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C305	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C306	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C307	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C308	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C309	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C310	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C311	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C312	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C313	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C314	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C315	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C316	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C317	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C318	1-164-182-11	CERAMIC CHIP 0.0033MF	10%	50V
C319	1-164-182-11	CERAMIC CHIP 0.0033MF	10%	50V
C320	1-165-320-11	CERAMIC CHIP 0.47MF	10%	16V
C321	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C322	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C323	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C324	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C325	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C332	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C333	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C334	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C335	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C336	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C337	1-162-568-11	CERAMIC CHIP 0.33MF	10%	16V
C338	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C339	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C340	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C341	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C342	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C343	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C344	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C345	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C346	1-164-505-11	CERAMIC CHIP 2.2MF		16V
C347	1-164-505-11	CERAMIC CHIP 2.2MF		16V
C350	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C351	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C355	1-163-231-11	CERAMIC CHIP 15PF	5%	50V
C356	1-163-231-11	CERAMIC CHIP 15PF	5%	50V
C357	1-163-241-11	CERAMIC CHIP 39PF	5%	50V
C1001	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1002	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1003	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1004	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1005	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1006	1-165-321-11	CERAMIC CHIP 0.68MF	10%	16V
C1007	1-164-344-11	CERAMIC CHIP 0.068MF	10%	25V
C1020	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1021	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1022	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1035	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1036	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1039	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1040	1-164-222-11	CERAMIC CHIP 0.22MF		25V
C1041	1-164-222-11	CERAMIC CHIP 0.22MF		25V
C1042	1-164-222-11	CERAMIC CHIP 0.22MF		25V
C1043	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C1060	1-163-001-11	CERAMIC CHIP 220PF	10%	50V
C1101	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1102	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1103	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1104	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1105	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C1106	1-164-346-11	CERAMIC CHIP 1MF		16V
C1108	1-163-009-11	CERAMIC CHIP 0.001MF	10%	50V
C1109	1-163-037-11	CERAMIC CHIP 0.022MF	10%	50V
C1110	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1111	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1112	1-163-235-11	CERAMIC CHIP 22PF	5%	50V
C1113	1-163-235-11	CERAMIC CHIP 22PF	5%	50V
C1115	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C1116	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1201	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1202	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1203	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1204	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1205	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1206	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1207	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1208	1-163-263-11	CERAMIC CHIP 330PF	5%	50V
C1209	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1210	1-165-320-11	CERAMIC CHIP 0.47MF	10%	16V
C1213	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1214	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1215	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1216	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1217	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1218	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1219	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1220	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C1221	1-162-638-11	CERAMIC CHIP 1MF		16V
C1222	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1223	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C1224	1-164-161-11	CERAMIC CHIP 0.0022MF	10%	50V
C1225	1-126-934-11	ELECT 220MF	20%	16V
C1227	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1228	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1229	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1230	1-163-245-11	CERAMIC CHIP 56PF	5%	50V

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REF.NO.	PART NO.	DESCRIPTION		REMARK
C1231	1-163-245-11	CERAMIC CHIP 56PF	5%	50V
C1235	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1301	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1302	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1303	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1304	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1305	1-163-222-11	CERAMIC CHIP 5PF	0.25PF	50V
C1306	1-163-243-11	CERAMIC CHIP 47PF	5%	50V
C1310	1-124-443-00	ELECT 100MF	20%	10V
C1311	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1312	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1313	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1314	1-163-275-11	CERAMIC CHIP 0.001MF	5%	50V
C1315	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1316	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1318	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1320	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1321	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1322	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1323	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1324	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1325	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1326	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1327	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1328	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1329	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1330	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1331	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1332	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1333	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1334	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1335	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C1350	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C1360	1-163-005-11	CERAMIC CHIP 470PF	10%	50V
C1361	1-104-663-11	ELECT 33MF	20%	16V
C1401	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1402	1-163-231-11	CERAMIC CHIP 15PF	5%	50V
C1403	1-163-231-11	CERAMIC CHIP 15PF	5%	50V
C1404	1-164-182-11	CERAMIC CHIP 0.0033MF	10%	50V
C1405	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1406	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1407	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1408	1-164-182-11	CERAMIC CHIP 0.0033MF	10%	50V
C1409	1-165-320-11	CERAMIC CHIP 0.47MF	10%	16V
C1413	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1414	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1415	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1416	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1417	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1418	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C1419	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1420	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1421	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C1422	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C2001	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C2002	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C2004	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C2005	1-164-506-11	CERAMIC CHIP 4.7MF		16V
C2007	1-163-038-91	CERAMIC CHIP 0.1MF		25V
C2020	1-164-222-11	CERAMIC CHIP 0.22MF		25V

REF.NO.	PART NO.	DESCRIPTION		REMARK
C2021	1-164-222-11	CERAMIC CHIP 0.22MF		25V
C2023	1-163-038-91	CERAMIC CHIP 0.1MF		25V
C2024	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C2025	1-163-235-11	CERAMIC CHIP 22PF	5%	50V
C2026	1-163-235-11	CERAMIC CHIP 22PF	5%	50V
C2028	1-163-031-11	CERAMIC CHIP 0.01MF		50V
C2029	1-164-222-11	CERAMIC CHIP 0.22MF		25V
C2030	1-163-251-11	CERAMIC CHIP 100PF	5%	50V
C2031	1-164-222-11	CERAMIC CHIP 0.22MF		25V
C2033	1-163-251-11	CERAMIC CHIP 100PF	5%	50V

< FILTER >

CD1001	1-527-992-31	OSCILLATOR, CERAMIC (6MHz)
CF200	1-409-327-00	TRAP, CERAMIC (6.5MHZ)

< CONNECTOR >

CN101	1-695-301-11	CONNECTOR, BOARD TO BOARD 40P
CN115	*1-564-524-11	PLUG, CONNECTOR 9P
CN117	*1-564-520-11	PLUG, CONNECTOR 5P
CN201	1-766-296-11	CONNECTOR, DUAL SCART
CN1411	1-564-523-11	PLUG, CONNECTOR 8P
CN1413	1-564-523-11	PLUG, CONNECTOR 8P
CN2012	*1-564-525-11	PLUG, CONNECTOR 10P

< BOOSTER >

CP101	1-251-372-11	BOOSTER, RF

< DIODE >

D102	8-719-158-49	DIODE RD12SB2
D103	8-719-158-49	DIODE RD12SB2
D104	8-719-158-49	DIODE RD12SB2
D105	8-719-158-49	DIODE RD12SB2
D199	8-719-914-43	DIODE DAN202K
D200	8-719-158-49	DIODE RD12SB2
D201	8-719-158-49	DIODE RD12SB2
D202	8-719-158-49	DIODE RD12SB2
D203	8-719-158-49	DIODE RD12SB2
D204	8-719-158-49	DIODE RD12SB2
D205	8-719-158-49	DIODE RD12SB2
D206	8-719-158-49	DIODE RD12SB2
D207	8-719-158-49	DIODE RD12SB2
D208	8-719-158-49	DIODE RD12SB2
D209	8-719-158-49	DIODE RD12SB2
D210	8-719-158-49	DIODE RD12SB2
D211	8-719-158-49	DIODE RD12SB2
D212	8-719-158-49	DIODE RD12SB2
D213	8-719-158-49	DIODE RD12SB2
D214	8-719-158-49	DIODE RD12SB2
D215	8-719-158-49	DIODE RD12SB2
D217	8-719-158-49	DIODE RD12SB2
D218	8-719-158-49	DIODE RD12SB2
D219	8-719-158-49	DIODE RD12SB2
D220	8-719-158-49	DIODE RD12SB2
D221	8-719-158-49	DIODE RD12SB2
D223	8-719-158-49	DIODE RD12SB2
D301	8-719-401-41	DIODE MA3051L-TX
D1007	8-719-914-44	DIODE DAP202K
D1008	8-719-914-43	DIODE DAN202K

REF.NO.	PART NO.	DESCRIPTION	REMARK
D1009	8-719-105-91	DIODE RD5.6M-B2	
D1010	8-719-105-91	DIODE RD5.6M-B2	
D1401	8-719-401-41	DIODE MA3051L-TX	
D2001	8-719-036-58	DIODE MA3030-H(TX)	

< FERRITE BEAD >

REF.NO.	PART NO.	DESCRIPTION	REMARK
FB101	1-414-235-11	INDUCTOR, FERRITE BEAD	
FB102	1-414-235-11	INDUCTOR, FERRITE BEAD	

< ENCAPSULATED FILTER >

REF.NO.	PART NO.	DESCRIPTION	REMARK
FL102	1-236-071-11	ENCAPSULATED COMPONENT	
FL103	1-236-071-11	ENCAPSULATED COMPONENT	
FL200	1-236-071-11	ENCAPSULATED COMPONENT	
FL201	1-233-764-21	FILTER (SMD)	
FL202	1-236-071-11	ENCAPSULATED COMPONENT	
FL203	1-236-071-11	ENCAPSULATED COMPONENT	
FL302	1-236-071-11	ENCAPSULATED COMPONENT	
FL1001	1-236-071-11	ENCAPSULATED COMPONENT	
FL1002	1-236-071-11	ENCAPSULATED COMPONENT	
FL1101	1-236-071-11	ENCAPSULATED COMPONENT	
FL1102	1-236-071-11	ENCAPSULATED COMPONENT	
FL1201	1-236-071-11	ENCAPSULATED COMPONENT	
FL1202	1-236-071-11	ENCAPSULATED COMPONENT	
FL1203	1-236-071-11	ENCAPSULATED COMPONENT	
FL1204	1-236-071-11	ENCAPSULATED COMPONENT	
FL1301	1-236-071-11	ENCAPSULATED COMPONENT	
FL1302	1-236-071-11	ENCAPSULATED COMPONENT	
FL1303	1-236-071-11	ENCAPSULATED COMPONENT	
FL1304	1-233-766-21	FILTER (SMD)	
FL1305	1-233-768-21	FILTER (SMD)	
FL1310	1-233-765-21	FILTER	
FL1402	1-236-071-11	ENCAPSULATED COMPONENT	
FL2001	1-236-071-11	ENCAPSULATED COMPONENT	
FL2003	1-236-071-11	ENCAPSULATED COMPONENT	

< IC >

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC101	8-752-069-53	IC CXA1855Q-T6	
IC102	8-759-267-25	IC LM2940CT-9.0	
IC104	8-759-514-57	IC BA7046F	
IC201	8-759-376-56	IC MSP3400C-PS-C6-T-ND (KV-28WS4A/28WS4D/28WS4K/28WS4R)	
	8-759-437-33	IC MSP3410B-PS-F7-T-ND (KV-28WS4B/28WS4E)	
IC302	8-759-439-59	IC TDA9144/N2 (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	8-759-439-58	IC TDA9143/N2 (KV-28WS4B)	
IC303	8-759-288-85	IC TDA4665T-T	
IC304	8-759-439-60	IC TDA9170T	
IC1001	8-759-351-92	IC SDA30C164-GEG	
IC1002	8-759-439-66	IC M27C4001-15C1-AE401	
	1-750-797-11	SOCKET PLCC ; IC1002	
IC1003	8-759-378-21	IC ST24C16FB6	
IC1004	8-759-259-18	IC MB3793-42PNF	
IC1101	8-752-378-77	IC CXD2053S	
IC1201	8-759-439-65	IC TC9337F-015	
IC1202	8-759-264-22	IC TC9293F-EL	
IC1301	8-752-379-35	IC CXD2044Q-TL	
IC1302	8-759-711-62	IC NJM2240M	
IC1303	8-759-385-76	IC MC14052BDR2	
IC1401	8-759-439-58	IC TDA9143/N2	
IC1402	8-759-288-85	IC TDA4665T-T (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
IC2001	8-759-438-62	IC SDA5275 (KV-28WS4A/28WS4B/28WS4D/28WS4K/28WS4R)	
	8-759-337-48	IC SDA5273P-C26-GEG (KV-28WS4E)	
IC2004	8-759-426-56	IC MB814400C-70PJN-ER	

< COIL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
L101	1-412-751-11	INDUCTOR 18UH (KV-28WS4B)	
L321	1-412-006-31	INDUCTOR CHIP 10UH	

< TRANSISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q102	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q103	8-729-039-67	TRANSISTOR BSS83 (KV-28WS4B)	
Q104	8-729-920-74	TRANSISTOR 2SC2412K-QR (KV-28WS4B)	
Q105	8-729-901-01	TRANSISTOR DTC144EK	
Q106	8-729-216-22	TRANSISTOR 2SA1162-G (KV-28WS4B)	
Q107	8-729-216-22	TRANSISTOR 2SA1162-G	
Q108	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q110	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q112	8-729-216-22	TRANSISTOR 2SA1162-G	
Q120	8-729-027-52	TRANSISTOR DTC124EKA-T146	
Q200	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q205	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q301	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q302	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q315	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q316	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q317	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q318	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1001	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1004	8-729-900-53	TRANSISTOR DTC114EK	
Q1101	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1201	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q1202	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q1301	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1302	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1303	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1304	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1305	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1306	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1307	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1308	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1309	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1310	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1311	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1312	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1313	8-729-216-22	TRANSISTOR 2SA1162-G	
Q1314	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1401	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q1402	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q1403	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q1404	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1411	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q1412	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q2005	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q2006	8-729-027-59	TRANSISTOR DTC144EKA-T146	
Q2007	8-729-027-59	TRANSISTOR DTC144EKA-T146	

A

REF.NO.	PART NO.	DESCRIPTION	REMARK
		< RESISTOR >	
C1212	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1001	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1002	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1003	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1004	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1006	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1008	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1009	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1010	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1011	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1339	1-216-295-91	METAL GLAZE 0 5% 1/10W	
JR1340	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R102	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R103	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R104	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R106	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R107	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R108	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R109	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R110	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R111	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R112	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R113	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R114	1-216-311-00	METAL GLAZE 6.8 5% 1/10W	
R115	1-216-311-00	METAL GLAZE 6.8 5% 1/10W	
R116	1-216-311-00	METAL GLAZE 6.8 5% 1/10W	
R117	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R118	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R119	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R120	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R121	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R122	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R123	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R124	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R126	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R127	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R128	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R129	1-208-774-11	METAL CHIP 470 0.50% 1/10W	(KV-28WS4B)
R130	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R131	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R132	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R133	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R134	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R135	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R136	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R137	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R138	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R139	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R141	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R142	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R143	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R144	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R146	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R148	1-208-774-11	METAL CHIP 470 0.50% 1/10W	(KV-28WS4B)
R149	1-216-073-00	METAL GLAZE 10K 5% 1/10W	(KV-28WS4B)
R151	1-208-774-11	METAL CHIP 470 0.50% 1/10W	(KV-28WS4B)
R152	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R153	1-216-311-00	METAL GLAZE 6.8 5% 1/10W	
R154	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R155	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R156	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	(KV-28WS4B)
R157	1-216-025-91	METAL GLAZE 100 5% 1/10W	(KV-28WS4B)
R159	1-216-304-11	METAL GLAZE 3.3 5% 1/10W	
R160	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R162	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R163	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R166	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R167	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R168	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R169	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R170	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R171	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R172	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R173	1-216-021-00	METAL GLAZE 68 5% 1/10W	
R175	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R176	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R177	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R178	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R179	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R180	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R181	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R182	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R183	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R184	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R185	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R186	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R187	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
R188	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R189	1-218-755-11	METAL CHIP 130K 0.50% 1/10W	
R190	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R191	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R192	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R193	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R194	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R195	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R196	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R197	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R198	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R199	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R200	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R201	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R202	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R203	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R204	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R205	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R207	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R208	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R209	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R210	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R211	1-216-025-91	METAL GLAZE 100 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R212	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R213	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R214	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R215	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R272	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R311	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R312	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R313	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R314	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R315	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R317	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R330	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R331	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R332	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R333	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R334	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R335	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R336	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R337	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R338	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R340	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R341	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R342	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R343	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R345	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R351	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R352	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R353	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R374	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R375	1-216-308-00	METAL GLAZE 4.7 5% 1/10W	
R1001	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1011	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1012	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R1030	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1033	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1034	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1036	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1037	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1038	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1039	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1040	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1041	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1042	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1043	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1044	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1045	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1046	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1047	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R1048	1-216-083-00	METAL GLAZE 27K 5% 1/10W	
R1050	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1051	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1052	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1053	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1054	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1056	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1057	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1058	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1059	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1060	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1061	1-216-049-91	METAL GLAZE 1K 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R1062	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1063	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1070	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1071	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1075	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1101	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1102	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1103	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1104	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1105	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1106	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R1107	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1108	1-216-013-00	METAL GLAZE 33 5% 1/10W	
R1109	1-216-005-00	METAL GLAZE 15 5% 1/10W	
R1110	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1111	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R1112	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1113	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1115	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R1201	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R1202	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R1203	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1204	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1206	1-216-295-91	METAL GLAZE 0 5% 1/10W	
R1208	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1209	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R1210	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1211	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1212	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R1213	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1214	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1215	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R1220	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1221	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1222	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1223	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1224	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R1225	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1301	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1302	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R1303	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1304	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R1305	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1306	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1307	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R1308	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R1309	1-216-017-91	METAL GLAZE 47 5% 1/10W	
R1310	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R1311	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R1319	1-216-043-91	METAL GLAZE 560 5% 1/10W	
R1320	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R1321	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R1325	1-216-009-00	METAL GLAZE 22 5% 1/10W	
R1330	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R1331	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R1332	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R1333	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R1334	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1335	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R1336	1-208-784-11	METAL CHIP 1.2K 0.50% 1/10W	

A **G**

The components identified by shading and marked ⚠ are critical for safety.
Replace only the part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION			REMARK
R1337	1-216-666-11	METAL CHIP	4.3K	0.50%	1/10W
R1338	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1339	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1340	1-216-037-00	METAL GLAZE	330	5%	1/10W
R1341	1-216-017-91	METAL GLAZE	47	5%	1/10W
R1342	1-216-017-91	METAL GLAZE	47	5%	1/10W
R1344	1-216-037-00	METAL GLAZE	330	5%	1/10W
R1346	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R1347	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R1348	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R1349	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R1350	1-216-017-91	METAL GLAZE	47	5%	1/10W
R1351	1-216-047-91	METAL GLAZE	820	5%	1/10W
R1352	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R1353	1-216-047-91	METAL GLAZE	820	5%	1/10W
R1354	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R1401	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R1402	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R1403	1-216-025-91	METAL GLAZE	100	5%	1/10W
R1404	1-216-025-91	METAL GLAZE	100	5%	1/10W
R1405	1-216-033-00	METAL GLAZE	220	5%	1/10W
R1406	1-216-037-00	METAL GLAZE	330	5%	1/10W
R1407	1-216-037-00	METAL GLAZE	330	5%	1/10W
R1410	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1411	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1412	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1413	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1414	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1415	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1416	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1417	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1418	1-216-041-00	METAL GLAZE	470	5%	1/10W
R1426	1-216-025-91	METAL GLAZE	100	5%	1/10W
R1427	1-216-025-91	METAL GLAZE	100	5%	1/10W
R1428	1-216-025-91	METAL GLAZE	100	5%	1/10W
R1461	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R1462	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R1463	1-216-041-00	METAL GLAZE	470	5%	1/10W
R2001	1-216-025-91	METAL GLAZE	100	5%	1/10W
R2002	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R2020	1-216-041-00	METAL GLAZE	470	5%	1/10W
R2021	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R2022	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R2023	1-216-063-91	METAL GLAZE	3.9K	5%	1/10W
R2024	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R2025	1-216-025-91	METAL GLAZE	100	5%	1/10W
R2026	1-216-025-91	METAL GLAZE	100	5%	1/10W
R2027	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R2028	1-216-009-00	METAL GLAZE	22	5%	1/10W
R2031	1-216-017-91	METAL GLAZE	47	5%	1/10W
R2032	1-216-017-91	METAL GLAZE	47	5%	1/10W
R2033	1-216-017-91	METAL GLAZE	47	5%	1/10W
R2034	1-216-295-91	METAL GLAZE	0	5%	1/10W
R2035	1-216-017-91	METAL GLAZE	47	5%	1/10W
R2037	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R2040	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R2041	1-216-025-91	METAL GLAZE	100	5%	1/10W

< TUNER >

REF.NO.	PART NO.	DESCRIPTION	REMARK
TU101	1-693-338-21	TUNER/VIF (AEP) (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	1-693-340-21	TUNER/VIF (FR) (KV-28WS4B)	

< CRYSTAL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
X200	1-760-628-11	VIBRATOR, CRYSTAL (18.432MHz)	
X301	1-567-505-11	OSCILLATOR, CRYSTAL (3.58MHz)	
X302	1-567-504-11	OSCILLATOR, CRYSTAL (4.43MHz)	
X1001	1-760-551-21	VIBRATOR, CERAMIC (20.48MHz)	
X1101	1-767-342-21	VIBRATOR, CRYSTAL (14.32MHz)	
X1401	1-567-505-11	OSCILLATOR, CRYSTAL (3.58MHz)	
X1402	1-567-504-11	OSCILLATOR, CRYSTAL (4.43MHz)	

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*A-1636-018-A G BOARD,COMPLETE
****

4-382-854-11 SCREW (M3X10), P, SW (+)

< CAPACITOR >

REF.NO.		PART NO.	DESCRIPTION			REMARK
C602		1-165-127-11	CERAMIC	470PF	10%	500V
C603		1-165-127-11	CERAMIC	470PF	10%	500V
C604		1-136-171-00	FILM	0.33MF	5%	50V
C605		1-137-399-11	FILM	0.1MF	5%	50V
C606		1-136-171-00	FILM	0.33MF	5%	50V
C607		1-137-399-11	FILM	0.1MF	5%	50V
C608		1-164-625-11	CERAMIC	680PF	10%	500V
C609		1-129-718-00	FILM	0.022MF	5%	630V
C610		1-126-953-11	ELECT	2200MF	20%	35V
C611		1-126-953-11	ELECT	2200MF	20%	35V
C612		1-124-903-11	ELECT	1MF	20%	50V
C613		1-128-548-11	ELECT	4700MF	20%	25V
C614		1-128-548-11	ELECT	4700MF	20%	25V
C615		1-110-626-11	ELECT	330MF	20%	160V
C616		1-164-625-11	CERAMIC	680PF	10%	500V
C617		1-136-559-11	MYLAR	0.0047MF	10%	400V
C618		1-104-989-91	FILM	0.0022MF	5%	200V
C621	⚠	1-136-519-12	FILM	0.47MF	20%	300V
C622	⚠	1-136-518-12	FILM	0.33MF	20%	300V
C624	⚠	1-113-890-61	CERAMIC	0.0022MF	20%	250V
C626	⚠	1-164-503-61	CERAMIC	0.0022MF	20%	400V
C627		1-126-940-11	ELECT	330MF	20%	25V
C628		1-126-965-11	ELECT	22MF	20%	50V
C629		1-162-599-12	CERAMIC	0.0047MF		250V
C630		1-162-599-12	CERAMIC	0.0047MF		250V
C631	⚠	1-161-964-91	CERAMIC	0.0047MF		250V
C633		1-125-555-11	ELECT	330MF	20%	400V
C635		1-136-165-00	FILM	0.1MF	5%	50V
C636		1-136-165-00	FILM	0.1MF	5%	50V
C637		1-126-964-11	ELECT	10MF	20%	50V
C642	⚠	1-162-580-51	CERAMIC	0.01MF		400V
C648		1-101-001-00	CERAMIC	0.001MF		50V
C650		1-126-964-11	ELECT	10MF	20%	50V
C651		1-136-171-00	FILM	0.33MF	5%	50V
C662		1-124-563-11	ELECT	2200MF	20%	25V
C663		1-126-964-11	ELECT	10MF	20%	50V
C664		1-102-129-00	CERAMIC	0.01MF	10%	50V
C665		1-126-940-11	ELECT	330MF	20%	25V

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REF.NO.	PART NO.	DESCRIPTION	REMARK
		< CONNECTOR >	
CN0008	⚠ 1-508-786-11	PIN, CONNECTOR (5MM PITCH) 2P	
CN0009	⚠ 1-508-765-11	PIN, CONNECTOR (5MM PITCH) 3P	
CN0701	1-573-299-21	CONNECTOR, BOARD TO BOARD 10P	
CN0702	1-695-300-11	CONNECTOR, BOARD TO BOARD 20P	
CN0703	⚠ *1-691-291-11	PIN, CONNECTOR (PC BOARD) 5P	
		< DIODE >	
D601	8-719-510-53	DIODE D4SB60L	
D602	8-719-991-33	DIODE 1SS133T-77	
D603	8-719-109-89	DIODE RD5.6ESB2	
D605	8-719-047-31	DIODE RBA-402L	
D607	8-719-510-12	DIODE D10SC4M	
D608	8-719-510-12	DIODE D10SC4M	
D609	8-719-047-31	DIODE RBA-402L	
D610	8-719-312-39	DIODE R2K-V1	
D611	8-719-510-64	DIODE S2LA20F	
D614	8-719-911-19	DIODE 1SS119-25	
D615	8-719-911-19	DIODE 1SS119-25	
D616	8-719-911-19	DIODE 1SS119-25	
D617	8-719-911-19	DIODE 1SS119-25	
D618	8-719-911-19	DIODE 1SS119-25	
D619	8-719-911-19	DIODE 1SS119-25	
D620	8-719-911-19	DIODE 1SS119-25	
D621	8-719-911-19	DIODE 1SS119-25	
D622	8-719-510-64	DIODE S2LA20F	
D623	8-719-510-64	DIODE S2LA20F	
D625	8-719-911-19	DIODE 1SS119-25	
D626	8-719-911-19	DIODE 1SS119-25	
D627	8-719-911-19	DIODE 1SS119-25	
D628	8-719-911-19	DIODE 1SS119-25	
D630	8-719-991-33	DIODE 1SS133T-77	
D633	8-719-991-33	DIODE 1SS133T-77	
D634	8-719-991-33	DIODE 1SS133T-77	
D636	8-719-511-40	DIODE S1VB40	
		< FERRITE BEAD >	
FB601	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB602	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB603	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
FB604	1-410-396-41	FERRITE BEAD INDUCTOR 0.45UH	
		< IC >	
IC601	1-810-051-11	POWER MODULE DM-48	
IC602	⚠ 8-749-010-65	PHOTO COUPLER PC123FY2	
IC603	8-759-510-52	IC TEA7605	
		< PROTECTOR MODULE >	
PS601	⚠ 1-801-550-21	PROTECTOR MODULE 2.5A MP250	
PS602	⚠ 1-801-550-21	PROTECTOR MODULE 2.5A MP250	
PS604	⚠ 1-801-550-21	PROTECTOR MODULE 2.5A MP250	
PS605	⚠ 1-801-549-21	PROTECTOR MODULE 4.0A MP400	
		< COIL >	
L605	1-412-523-11	INDUCTOR 6.8UH	
L606	1-412-523-11	INDUCTOR 6.8UH	
		< TRANSISTOR >	
Q601	8-729-032-87	TRANSISTOR 2SC4834NP-F09	
Q602	8-729-032-87	TRANSISTOR 2SC4834NP-F09	

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q603	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q604	8-729-200-21	TRANSISTOR 2SC2500-B				
Q605	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q608	8-729-200-21	TRANSISTOR 2SC2500-B				
Q610	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q611	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q612	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q615	8-729-200-21	TRANSISTOR 2SC2500-B				
Q621	8-729-200-21	TRANSISTOR 2SC2500-B				
		< RESISTOR >				
R601	1-202-933-61	FUSIBLE	0.1	10%	1/2W	F
R602	1-247-891-00	CARBON	330K	5%	1/4W	
R603	1-247-891-00	CARBON	330K	5%	1/4W	
R604	1-216-369-00	METAL OXIDE	1	5%	2W	F
R605	1-247-891-00	CARBON	330K	5%	1/4W	
R606	1-247-891-00	CARBON	330K	5%	1/4W	
R607	1-216-369-00	METAL OXIDE	1	5%	2W	F
R608	1-247-887-00	CARBON	220K	5%	1/4W	
R609	1-249-429-11	CARBON	10K	5%	1/4W	F
R610	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R611	1-249-377-11	CARBON	0.47	5%	1/4W	F
R616	⚠ 1-205-949-11	WIREWOUND	1.8	5%	10W	
R617	⚠ 1-205-949-11	WIREWOUND	1.8	5%	10W	
R619	⚠ 1-244-945-91	CARBON	1M	5%	1/2W	
R620	⚠ 1-218-265-91	METAL	8.2M	5%	1W	
R621	1-249-417-11	CARBON	1K	5%	1/4W	F
R622	1-249-430-11	CARBON	12K	5%	1/4W	
R623	1-249-436-11	CARBON	39K	5%	1/4W	
R624	1-249-425-11	CARBON	4.7K	5%	1/4W	
R625	1-247-815-91	CARBON	220	5%	1/4W	
R626	1-247-863-91	CARBON	22K	5%	1/4W	
R627	1-247-815-91	CARBON	220	5%	1/4W	
R628	1-247-807-31	CARBON	100	5%	1/4W	
R636	1-207-905-00	WIREWOUND	0.27	10%	2W	F
R637	1-249-389-11	CARBON	4.7	5%	1/4W	F
R639	1-247-791-91	CARBON	22	5%	1/4W	
R640	1-247-791-91	CARBON	22	5%	1/4W	
R641	1-247-791-91	CARBON	22	5%	1/4W	
R642	1-247-791-91	CARBON	22	5%	1/4W	
R651	1-215-880-00	METAL OXIDE	10	5%	2W	F
R652	1-247-891-00	CARBON	330K	5%	1/4W	
R653	1-247-891-00	CARBON	330K	5%	1/4W	
R654	1-247-891-00	CARBON	330K	5%	1/4W	
R655	1-247-891-00	CARBON	330K	5%	1/4W	
R656	1-249-439-11	CARBON	68K	5%	1/4W	
R657	1-249-429-11	CARBON	10K	5%	1/4W	
R658	1-249-421-11	CARBON	2.2K	5%	1/4W	
R659	1-249-425-11	CARBON	4.7K	5%	1/4W	
R660	1-249-429-11	CARBON	10K	5%	1/4W	
R661	1-249-421-11	CARBON	2.2K	5%	1/4W	
R662	1-249-421-11	CARBON	2.2K	5%	1/4W	
R663	1-249-429-11	CARBON	10K	5%	1/4W	
R664	1-249-429-11	CARBON	10K	5%	1/4W	
R667	1-249-377-11	CARBON	0.47	5%	1/4W	F
R670	1-249-417-11	CARBON	1K	5%	1/4W	
		< RELAY >				
RY601	⚠ 1-755-167-11	RELAY, AC POWER				
RY602	⚠ 1-755-167-11	RELAY, AC POWER				

G **C**

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Ne les remplacer que par une piece portant le numero specifie.

< TRANSFORMER >

REF.NO.		PART NO.	DESCRIPTION	REMARK
LF602	⚠	1-429-860-11	TRANSFORMER, LINE FILTER	
T601	⚠	1-429-844-11	TRANSFORMER, CONVERTER (PIT)	
T602	⚠	1-429-264-11	TRANSFORMER, CONVERTER (PIT)	
T603	⚠	1-429-951-11	TRANSFORMER	

< THERMISTOR >

REF.NO.		PART NO.	DESCRIPTION	REMARK
THP601	⚠	1-801-071-51	THERMISTOR, POSITIVE	

< VARISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
VDR601	1-810-977-21	VARISTOR ERZV10D621	

****

*A-1638-092-A C BOARD, COMPLETE
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4-382-854-11 SCREW (M3X10), P, SW (+)

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION			
C701	1-107-666-11	ELECT	1MF	20%	350V
C702	1-107-666-11	ELECT	1MF	20%	350V
C703	1-107-666-11	ELECT	1MF	20%	350V
C704	1-102-129-00	CERAMIC	0.01MF	10%	50V
C705	1-126-941-11	ELECT	470MF	20%	16V
C706	1-126-941-11	ELECT	470MF	20%	16V
C708	1-126-941-11	ELECT	470MF	20%	16V
C709	1-102-157-00	CERAMIC	560PF	10%	500V
C710	1-102-157-00	CERAMIC	560PF	10%	500V
C711	1-102-157-00	CERAMIC	560PF	10%	500V
C712	1-126-965-11	ELECT	22MF	20%	50V
C713	1-162-116-00	CERAMIC	680PF	10%	2KV
C714	1-162-115-00	CERAMIC	330PF	10%	2KV
C716	1-162-116-00	CERAMIC	680PF	10%	2KV
C717	1-102-129-00	CERAMIC	0.01MF	10%	50V
C718	1-102-129-00	CERAMIC	0.01MF	10%	50V
C719	1-124-903-11	ELECT	1MF	20%	50V
C720	1-123-947-00	ELECT	10MF	20%	250V
C723	1-162-116-00	CERAMIC	680PF	10%	2KV

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION
CN0004	1-695-915-11	TAB (CONTACT)
CN0403	*1-564-512-11	PLUG, CONNECTOR 9P
CN0421	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P

< DIODE >

REF.NO.	PART NO.	DESCRIPTION
D701	8-719-991-33	DIODE 1SS133T-77
D702	8-719-901-83	DIODE 1SS83
D703	8-719-901-83	DIODE 1SS83
D704	8-719-901-83	DIODE 1SS83
D705	8-719-991-33	DIODE 1SS133T-77
D706	8-719-908-03	DIODE GP08D
D707	8-719-991-33	DIODE 1SS133T-77
D712	8-719-923-60	DIODE MTZJ-T-77-9.1A
D714	8-719-921-88	DIODE MTZJ-T-13B
D715	8-719-911-19	DIODE 1SS119-25
D716	8-719-911-19	DIODE 1SS119-25
D717	8-719-911-19	DIODE 1SS119-25
D718	8-719-982-96	DIODE MTZJ-T-77-2.2A
D719	8-719-982-96	DIODE MTZJ-T-77-2.2A
D720	8-719-901-83	DIODE 1SS83
D721	8-719-901-83	DIODE 1SS83
D722	8-719-901-83	DIODE 1SS83
D723	8-719-901-83	DIODE 1SS83
D724	8-719-018-82	DIODE RGP02-20EL-6394

< IC >

REF.NO.	PART NO.	DESCRIPTION
IC703	8-759-073-90	IC TDA6111Q
IC704	8-759-073-90	IC TDA6111Q
IC705	8-759-073-90	IC TDA6111Q

< CRT SOCKET >

REF.NO.		PART NO.	DESCRIPTION	REMARK
J701	⚠	1-526-990-22	SOCKET, CRT	

< COIL >

REF.NO.	PART NO.	DESCRIPTION	
L701	1-410-671-31	INDUCTOR	47UH
L704	1-408-405-00	INDUCTOR	4.7UH
L705	1-408-405-00	INDUCTOR	4.7UH
L706	1-408-405-00	INDUCTOR	4.7UH
L709	1-408-409-00	INDUCTOR	10UH

< TRANSISTOR >

REF.NO.	PART NO.	DESCRIPTION
Q701	8-729-255-12	TRANSISTOR 2SC2551
Q702	8-729-255-12	TRANSISTOR 2SC2551
Q703	8-729-255-12	TRANSISTOR 2SC2551
Q704	8-729-026-41	TRANSISTOR 2SA933AS-QRT
Q705	8-729-029-56	TRANSISTOR DTA144ESA
Q706	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q707	8-729-173-38	TRANSISTOR 2SA733-K

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION				REMARK
R701	1-249-420-11	CARBON	1.8K	5%	1/4W	
R702	1-249-425-11	CARBON	4.7K	5%	1/4W	
R703	1-249-435-11	CARBON	33K	5%	1/4W	
R704	1-249-429-11	CARBON	10K	5%	1/4W	
R705	1-249-430-11	CARBON	12K	5%	1/4W	
R706	1-247-863-91	CARBON	22K	5%	1/4W	
R707	1-247-863-91	CARBON	22K	5%	1/4W	
R708	1-247-863-91	CARBON	22K	5%	1/4W	
R709	1-249-416-11	CARBON	820	5%	1/4W	
R710	1-249-416-11	CARBON	820	5%	1/4W	
R711	1-249-416-11	CARBON	820	5%	1/4W	
R712	1-249-421-11	CARBON	2.2K	5%	1/4W	
R713	1-249-417-11	CARBON	1K	5%	1/4W	
R714	1-249-417-11	CARBON	1K	5%	1/4W	
R715	1-249-417-11	CARBON	1K	5%	1/4W	
R716	1-249-417-11	CARBON	1K	5%	1/4W	
R717	1-249-417-11	CARBON	1K	5%	1/4W	
R718	1-249-417-11	CARBON	1K	5%	1/4W	
R719	1-249-417-11	CARBON	1K	5%	1/4W	
R720	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R721	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R722	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R723	1-249-408-11	CARBON	180	5%	1/4W	
R724	1-249-408-11	CARBON	180	5%	1/4W	
R725	1-249-408-11	CARBON	180	5%	1/4W	
R726	1-202-565-00	SOLID	470	20%	1/2W	
R727	1-202-565-00	SOLID	470	20%	1/2W	
R728	1-202-565-00	SOLID	470	20%	1/2W	
R729	1-249-424-11	CARBON	3.9K	5%	1/4W	
R730	1-249-424-11	CARBON	3.9K	5%	1/4W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
R731	1-249-424-11	CARBON	3.9K	5%	1/4W	
R732	1-202-549-00	SOLID	100	20%	1/2W	
R733	1-247-863-91	CARBON	22K	5%	1/4W	
R734	1-202-549-00	SOLID	100	20%	1/2W	
R735	1-249-416-11	CARBON	820	5%	1/4W	
R741	1-202-884-11	SOLID	820K	20%	1/2W	
R743	1-202-884-11	SOLID	820K	20%	1/2W	
R750	1-249-429-11	CARBON	10K	5%	1/4W	
R751	1-249-438-11	CARBON	56K	5%	1/4W	
R752	1-249-417-11	CARBON	1K	5%	1/4W	F
R753	1-215-911-11	METAL OXIDE	100	5%	3W	F
R754	1-202-841-00	SOLID	180K	20%	1/2W	
R755	1-249-429-11	CARBON	10K	5%	1/4W	
R756	1-249-432-11	CARBON	18K	5%	1/4W	
R757	1-249-431-11	CARBON	15K	5%	1/4W	

< VARIABLE RESISTOR >

RV701	1-230-641-11	RES, ADJ, METAL GLAZE 2.2M
RV704	1-241-656-21	RES, ADJ, METAL FILM 110M

****

*A-1640-244-A D BOARD, COMPLETE
****

4-382-854-11 SCREW (M3X10), P, SW (+)

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION				REMARK
C101	1-126-965-11	ELECT	22MF	20%	50V	
C236	1-136-165-00	FILM	0.1MF	5%	50V	
C237	1-136-165-00	FILM	0.1MF	5%	50V	
C238	1-126-967-11	ELECT	47MF	20%	16V	
C241	1-126-967-11	ELECT	47MF	20%	16V	
C242	1-126-953-11	ELECT	2200MF	20%	35V	
C243	1-136-165-00	FILM	0.1MF	5%	50V	
C244	1-126-953-11	ELECT	2200MF	20%	35V	
C245	1-136-165-00	FILM	0.1MF	5%	50V	
C260	1-126-964-11	ELECT	10MF	20%	50V	
C261	1-126-964-11	ELECT	10MF	20%	50V	
C262	1-104-665-11	ELECT	100MF	20%	25V	
C263	1-136-165-00	FILM	0.1MF	5%	50V	
C264	1-126-933-11	ELECT	100MF	20%	16V	
C265	1-136-165-00	FILM	0.1MF	5%	50V	
C266	1-104-665-11	ELECT	100MF	20%	25V	
C267	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C268	1-162-318-11	CERAMIC	0.001MF	10%	500V	
C269	1-126-967-11	ELECT	47MF	20%	16V	
C270	1-136-165-00	FILM	0.1MF	5%	50V	
C271	1-126-965-11	ELECT	22MF	20%	50V	
C272	1-136-165-00	FILM	0.1MF	5%	50V	
C273	1-136-161-00	FILM	0.047MF	5%	50V	
C274	1-124-925-11	ELECT	2.2MF	20%	50V	
C275	1-124-925-11	ELECT	2.2MF	20%	50V	
C276	1-126-967-11	ELECT	47MF	20%	16V	
C277	1-126-934-11	ELECT	220MF	20%	16V	
C278	1-107-714-11	ELECT	10MF	20%	16V	
C279	1-126-965-11	ELECT	22MF	20%	50V	
C280	1-136-169-00	FILM	0.22MF	5%	50V	
C281	1-126-967-11	ELECT	47MF	20%	16V	
C283	1-136-169-00	FILM	0.22MF	5%	50V	
C620	1-126-967-11	ELECT	47MF	20%	50V	
C639	1-126-964-11	ELECT	10MF	20%	50V	
C652	1-136-171-00	FILM	0.33MF	5%	50V	
C653	1-104-661-91	ELECT	330MF	20%	16V	
C654	1-104-664-11	ELECT	47MF	20%	25V	
C656	1-126-967-11	ELECT	47MF	20%	16V	
C657	1-136-165-00	FILM	0.1MF	5%	50V	
C658	1-136-165-00	FILM	0.1MF	5%	50V	
C659	1-136-165-00	FILM	0.1MF	5%	50V	
C660	1-136-164-00	FILM	0.082MF	5%	50V	
C666	1-104-661-91	ELECT	330MF	20%	16V	
C667	1-136-165-00	FILM	0.1MF	5%	50V	
C668	1-136-165-00	FILM	0.1MF	5%	50V	
C669	1-136-165-00	FILM	0.1MF	5%	50V	
C670	1-136-165-00	FILM	0.1MF	5%	50V	
C671	1-136-165-00	FILM	0.1MF	5%	50V	
C801	1-123-024-21	ELECT	33MF		160V	
C802	1-136-207-11	FILM	0.047MF	10%	250V	
C804	1-102-110-00	CERAMIC	220PF	10%	50V	
C805	1-102-117-00	CERAMIC	820PF	10%	50V	
C807	1-162-129-00	CERAMIC	150PF	10%	2KV	
C808	1-162-116-00	CERAMIC	680PF	10%	2KV	
C809	1-162-116-00	CERAMIC	680PF	10%	2KV	
C810	1-136-558-11	FILM	0.0039MF	10%	400V	
C811	1-109-948-11	FILM	0.015MF	3%	2.5KV	
C812	1-129-722-00	FILM	0.047MF	10%	630V	
C813	1-109-844-11	FILM	0.68MF	5%	400V	
C814	1-129-702-00	FILM	0.001MF	10%	400V	
C816	1-109-844-11	FILM	0.68MF	5%	400V	
C817	1-136-759-11	FILM	0.039MF	5%	630V	
C819	1-137-102-11	FILM	0.022MF	10%	250V	
C822	1-126-967-11	ELECT	47MF	20%	50V	
C823	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C824	1-162-117-00	CERAMIC	100PF	10%	500V	
C825	1-126-964-11	ELECT	10MF	20%	50V	
C827	1-102-228-00	CERAMIC	470PF	10%	500V	
C835	1-107-655-11	ELECT	47MF	20%	250V	
C836	1-102-228-00	CERAMIC	470PF	10%	500V	
C837	1-102-228-00	CERAMIC	470PF	10%	500V	
C838	1-102-228-00	CERAMIC	470PF	10%	500V	
C841	1-106-375-12	MYLAR	0.022MF	10%	250V	
C842	1-106-363-00	MYLAR	0.0068MF	10%	400V	
C852	1-126-968-11	ELECT	100MF	20%	50V	
C854	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C855	1-126-941-11	ELECT	470MF	20%	25V	
C856	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C857	1-126-941-11	ELECT	470MF	20%	25V	
C860	1-106-220-00	MYLAR	0.1MF	10%	100V	
C862	1-130-789-00	FILM	1MF	5%	100V	
C866	1-137-040-11	FILM	0.0022MF	10%	400V	
C867	1-107-909-11	ELECT	47MF	20%	50V	
C873	1-161-754-00	CERAMIC	0.001MF	10%	2KV	
C874	1-164-645-11	CERAMIC	1000PF	10%	500V	
C900	1-101-810-00	CERAMIC	100PF	5%	500V	
C901	1-101-810-00	CERAMIC	100PF	5%	500V	
C902	1-137-372-11	FILM	0.022MF	5%	50V	
C903	1-137-372-11	FILM	0.022MF	5%	50V	
C905	1-126-964-11	ELECT	10MF	20%	50V	
C907	1-124-903-11	ELECT	1MF	20%	50V	
C908	1-124-903-11	ELECT	1MF	20%	50V	
C910	1-126-967-11	ELECT	47MF	20%	50V	
C911	1-126-967-11	ELECT	47MF	20%	50V	

D

The components identified by shading and marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
C1619	1-106-220-00	MYLAR 0.1MF 10%	100V
C1621	1-106-367-00	MYLAR 0.01MF 10%	400V
C1628	1-136-244-11	FILM 0.1MF 5%	50V
C1629	1-130-481-00	FILM 0.0068MF 5%	50V
C1632	1-136-203-11	FILM 0.01MF 10%	250V
C2701	1-126-964-11	ELECT 10MF 20%	50V
C2702	1-104-664-11	ELECT 47MF 20%	25V
C2706	1-102-820-00	CERAMIC 330PF 5%	50V

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
CN0001	*1-564-520-11	PLUG, CONNECTOR 5P	
CN0002	*1-568-878-51	PIN, CONNECTOR 3P	
CN0004	1-568-878-51	PIN, CONNECTOR 3P	
CN0005	1-695-915-11	TAB (CONTACT)	
CN0101	*1-573-296-21	CONNECTOR, BOARD TO BOARD 10P	
CN0102	1-695-297-11	CONNECTOR, BOARD TO BOARD 20P	
CN0103	*1-564-509-11	PLUG, CONNECTOR 6P	
CN0521	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P	
CN0721 ⚠	*1-580-844-11	PIN, CONNECTOR (POWER)	
CN0723 ⚠	*1-695-292-11	PIN, CONNECTOR (POWER)	
CN0740	*1-568-880-51	PIN, CONNECTOR 5P	
CN0741	*1-564-512-11	PLUG, CONNECTOR 9P	
CN0743	*1-564-596-11	PLUG, CONNECTOR 15P	
CN0745	1-695-298-11	CONNECTOR, BOARD TO BOARD 40P	
CN0747	*1-568-880-51	PIN, CONNECTOR 5P	
CN3133	1-568-882-51	PIN, CONNECTOR 7P	

< DIODE >

REF.NO.	PART NO.	DESCRIPTION	REMARK
D101	8-719-982-27	DIODE MTZJ-33C	
D236	8-719-911-19	DIODE 1SS119-25	
D237	8-719-911-19	DIODE 1SS119-25	
D238	8-719-911-19	DIODE 1SS119-25	
D239	8-719-911-19	DIODE 1SS119-25	
D262	8-719-911-19	DIODE 1SS119-25	
D264	8-719-911-19	DIODE 1SS119-25	
D276	8-719-911-19	DIODE 1SS119-25	
D278	8-719-911-19	DIODE 1SS119-25	
D279	8-719-911-19	DIODE 1SS119-25	
D280	8-719-911-19	DIODE 1SS119-25	
D281	8-719-911-19	DIODE 1SS119-25	
D282	8-719-911-19	DIODE 1SS119-25	
D612	8-719-911-19	DIODE 1SS119-25	
D613	8-719-911-19	DIODE 1SS119-25	
D631	8-719-911-19	DIODE 1SS119-25	
D632	8-719-911-19	DIODE 1SS119-25	
D633	8-719-911-19	DIODE 1SS119-25	
D802	8-719-979-99	DIODE ERD08M-15	
D803	8-719-043-14	DIODE ESAD39M-06C	
D804	8-719-971-20	DIODE ERC38-06	
D805	8-719-908-03	DIODE GP08D	
D806	8-719-908-03	DIODE GP08D	
D810	8-719-979-85	DIODE EGP20G	
D811	8-719-302-43	DIODE EL1Z	
D812	8-719-510-26	DIODE D1NL20	
D813	8-719-510-26	DIODE D1NL20	
D814	8-719-908-03	DIODE GP08D	
D815	8-719-110-13	DIODE RD9.1ESB2	
D816	8-719-110-41	DIODE RD15ES-B2	
D817	8-719-911-19	DIODE 1SS119-25	
D818	8-719-911-19	DIODE 1SS119-25	
D819	8-719-911-19	DIODE 1SS119-25	
D873	8-719-911-19	DIODE 1SS119-25	
D874	8-719-911-19	DIODE 1SS119-25	
D901	8-719-030-11	DIODE SLA-570KT3F	
	*4-203-258-11	HOLDER, LED ; D901	
D1609	8-719-979-85	DIODE EGP20G	
D1611	8-719-911-19	DIODE 1SS119-25	
D2701	8-719-911-19	DIODE 1SS119-25	
D2702	8-719-911-19	DIODE 1SS119-25	

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
DY1	*1-580-798-11	CONNECTOR PIN (DY) 6P	

< FUSE >

REF.NO.	PART NO.	DESCRIPTION	REMARK
F601 ⚠	1-532-299-00	FUSE 5A/250V	
⚠	*1-533-725-11	HOLDER, FUSE ; F601	

< IC >

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC236	8-759-190-89	IC TDA7265	
	4-202-373-01	SPRING, IC ; IC236	
	4-202-710-01	SPACER, INSULATING ; IC236	
IC260	8-759-330-93	IC TDA7309	
IC261	8-759-502-21	IC TDA2822M	
IC603	8-759-095-34	IC LM2940T-8.0	
IC604	8-759-513-71	IC PQ05RF21	
	4-202-373-01	SPRING, IC ; IC604	
IC606	8-759-991-43	IC LM78L12ACZ	
IC607	8-759-513-71	IC PQ05RF21	
	4-202-373-01	SPRING, IC ; IC607	
IC801	8-759-103-93	IC UPC393C	
IC802	8-759-192-71	IC STV9379	
	4-202-373-01	SPRING, IC ; IC802	
IC900	8-742-014-00	RECEIVER HIC SBX1981-51	
IC2701	8-759-603-37	IC M5216P	

< SOCKET >

REF.NO.	PART NO.	DESCRIPTION	REMARK
J900	1-764-606-11	JACK	
J901	1-568-678-21	TERMINAL BLOCK S 3P	
J1200	1-770-218-11	JACK, PIN	

< COIL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
L602	1-412-525-31	INDUCTOR 10UH	
L603	1-412-525-31	INDUCTOR 10UH	
L802	1-459-474-11	COIL (WITH CORE)	
L803	1-459-474-11	COIL (WITH CORE)	
L806	1-459-592-11	COIL (WITH CORE) (PMC) 150UH	
L807	1-412-524-11	INDUCTOR 8.2UH	
L811	1-459-104-00	COIL, WITH CORE 10MMH	
L813	1-406-988-21	COIL, CHOKE 6.8MMH	
L814	1-422-613-11	COIL, AIR CORE	
L815	1-410-397-21	FERRITE BEAD INDUCTOR 1.1UH	
L816	1-408-947-00	INDUCTOR 2.2MMH	
L902	1-408-409-00	INDUCTOR 10UH	
L903	1-408-409-00	INDUCTOR 10UH	
L1604	1-406-988-21	COIL, CHOKE 6.8MMH	
L1605	1-406-988-21	COIL, CHOKE 6.8MMH	

< TRANSISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q276	8-729-030-03	TRANSISTOR DTC144ESA-TP	

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q277	8-729-173-38	TRANSISTOR 2SA733-K	
Q278	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q279	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q280	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q281	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q282	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q606	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q607	8-729-029-56	TRANSISTOR DTA144ESA	
Q613	8-729-030-03	TRANSISTOR DTC144ESA-TP	
Q614	8-729-029-56	TRANSISTOR DTA144ESA	
Q616	8-729-030-03	TRANSISTOR DTC144ESA-TP	
Q617	8-729-029-67	TRANSISTOR DTC114ESA-TP	
Q618	8-729-029-56	TRANSISTOR DTA144ESA	
Q620	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q624	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q801	8-729-119-80	TRANSISTOR 2SC2688-LK	
Q802	8-729-821-07	TRANSISTOR 2SC3997CA	
	4-200-399-01	SPACER, IC ; Q802	
Q803	8-729-039-68	TRANSISTOR IRF620	
	4-202-373-01	SPRING, IC ; Q803	
Q804	8-729-039-68	TRANSISTOR IRF620	
Q1610	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q1611	8-729-017-06	TRANSISTOR 2SC4793	
Q2701	8-729-119-78	TRANSISTOR 2SC2785-HFE	

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION				REMARK
R236	1-249-424-11	CARBON	3.9K	5%	1/4W	
R237	1-249-417-11	CARBON	1K	5%	1/4W	
R239	1-249-424-11	CARBON	3.9K	5%	1/4W	
R240	1-249-417-11	CARBON	1K	5%	1/4W	
R244	1-249-413-11	CARBON	470	5%	1/4W	
R245	1-249-430-11	CARBON	12K	5%	1/4W	
R246	1-249-430-11	CARBON	12K	5%	1/4W	
R247	1-249-413-11	CARBON	470	5%	1/4W	
R248	1-249-425-11	CARBON	4.7K	5%	1/4W	
R249	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R250	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R251	1-249-429-11	CARBON	10K	5%	1/4W	
R252	1-249-429-11	CARBON	10K	5%	1/4W	
R255	1-249-411-11	CARBON	330	5%	1/4W	
R256	1-249-411-11	CARBON	330	5%	1/4W	
R260	1-247-863-91	CARBON	22K	5%	1/4W	
R261	1-247-863-91	CARBON	22K	5%	1/4W	
R262	1-249-421-11	CARBON	2.2K	5%	1/4W	
R263	1-249-421-11	CARBON	2.2K	5%	1/4W	
R264	1-212-857-00	FUSIBLE	10	5%	1/4W	F
R265	1-249-389-11	CARBON	4.7	5%	1/4W	F
R266	1-249-389-11	CARBON	4.7	5%	1/4W	F
R267	1-247-815-91	CARBON	220	5%	1/4W	
R268	1-247-815-91	CARBON	220	5%	1/4W	
R269	1-249-415-11	CARBON	680	5%	1/4W	
R270	1-249-415-11	CARBON	680	5%	1/4W	
R271	1-247-742-11	CARBON	180	5%	1/2W	F
R277	1-249-419-11	CARBON	1.5K	5%	1/4W	
R278	1-249-441-11	CARBON	100K	5%	1/4W	
R279	1-249-429-11	CARBON	10K	5%	1/4W	
R280	1-249-425-11	CARBON	4.7K	5%	1/4W	
R281	1-249-437-11	CARBON	47K	5%	1/4W	
R282	1-249-430-11	CARBON	12K	5%	1/4W	
R283	1-249-429-11	CARBON	10K	5%	1/4W	
R284	1-249-432-11	CARBON	18K	5%	1/4W	
R285	1-249-425-11	CARBON	4.7K	5%	1/4W	
R286	1-249-421-11	CARBON	2.2K	5%	1/4W	
R287	1-249-412-11	CARBON	390	5%	1/4W	
R288	1-249-421-11	CARBON	2.2K	5%	1/4W	
R289	1-249-421-11	CARBON	2.2K	5%	1/4W	
R290	1-247-807-31	CARBON	100	5%	1/4W	
R291	1-249-421-11	CARBON	2.2K	5%	1/4W	
R292	1-249-429-11	CARBON	10K	5%	1/4W	
R293	1-249-429-11	CARBON	10K	5%	1/4W	
R294	1-249-429-11	CARBON	10K	5%	1/4W	
R295	1-247-885-00	CARBON	180K	5%	1/4W	
R296	1-247-885-00	CARBON	180K	5%	1/4W	
R297	1-247-807-31	CARBON	100	5%	1/4W	
R298	1-247-807-31	CARBON	100	5%	1/4W	
R630	1-249-429-11	CARBON	10K	5%	1/4W	
R631	1-215-477-00	METAL	220K	1%	1/4W	
R632	1-249-417-11	CARBON	1K	5%	1/4W	
R633	1-249-429-11	CARBON	10K	5%	1/4W	
R634	1-247-895-91	CARBON	470K	5%	1/4W	
R635	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R638	1-249-425-11	CARBON	4.7K	5%	1/4W	
R644	1-249-425-11	CARBON	4.7K	5%	1/4W	
R645	1-249-410-11	CARBON	270	5%	1/4W	
R646	1-249-403-11	CARBON	68	5%	1/4W	
R647	1-249-420-11	CARBON	1.8K	5%	1/4W	
R665	1-249-425-11	CARBON	4.7K	5%	1/4W	
R666	1-249-413-11	CARBON	470	5%	1/4W	
R676	1-249-437-11	CARBON	47K	5%	1/4W	
R677	1-249-437-11	CARBON	47K	5%	1/4W	
R678	1-249-421-11	CARBON	2.2K	5%	1/4W	
R679	1-247-815-91	CARBON	220	5%	1/4W	
R802	1-215-916-00	METAL OXIDE	680	5%	3W	F
R803	1-215-916-00	METAL OXIDE	680	5%	3W	F
R804	1-215-916-00	METAL OXIDE	680	5%	3W	F
R805	1-215-923-00	METAL OXIDE	10K	5%	3W	F
R806	1-249-411-11	CARBON	330	5%	1/4W	
R807	1-247-843-11	CARBON	3.3K	5%	1/4W	
R808	1-216-385-11	METAL OXIDE	0.47	5%	3W	F
R809	1-215-880-00	METAL OXIDE	10	5%	2W	F
R810	1-215-914-11	METAL OXIDE	330	5%	3W	F
R811	1-216-434-11	METAL OXIDE	1.8K	5%	1W	F
R817	1-202-972-61	FUSIBLE	1	5%	1/4W	F
R818	1-249-377-11	CARBON	0.47	5%	1/4W	F
R819	1-249-377-11	CARBON	0.47	5%	1/4W	F
R820	1-214-907-00	METAL	56K	1%	1/2W	
R821	1-249-427-11	CARBON	6.8K	5%	1/4W	
R823	1-249-420-11	CARBON	1.8K	5%	1/4W	
R835	1-249-432-11	CARBON	18K	5%	1/4W	
R837	1-249-422-11	CARBON	2.7K	5%	1/4W	
R842	1-249-399-11	CARBON	33	5%	1/4W	F
R843	1-202-822-00	SOLID	2.2K	20%	1/2W	
R844	1-249-424-11	CARBON	3.9K	5%	1/4W	
R845	1-247-881-00	CARBON	120K	5%	1/4W	
R846	1-249-422-11	CARBON	2.7K	5%	1/4W	
R847	1-249-437-11	CARBON	47K	5%	1/4W	
R848	1-249-425-11	CARBON	4.7K	5%	1/4W	
R849	1-249-429-11	CARBON	10K	5%	1/4W	
R850	1-249-389-11	CARBON	4.7	5%	1/4W	F
R851	1-216-399-00	METAL OXIDE	6.8	5%	3W	F
R854	1-249-436-11	CARBON	39K	5%	1/4W	

D **VM**

The components identified by shading and marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R855	1-249-417-11	CARBON	1K	5%	1/4W	
R857	1-202-822-00	SOLID	2.2K	20%	1/2W	
R859	1-249-432-11	CARBON	18K	5%	1/4W	
R860	1-247-843-11	CARBON	3.3K	5%	1/4W	
R861	1-249-417-11	CARBON	1K	5%	1/4W	
R862	1-249-383-11	CARBON	1.5	5%	1/4W	F
R863	1-216-475-11	METAL OXIDE	120	5%	3W	F
R865	1-249-436-11	CARBON	39K	5%	1/4W	
R866	1-249-432-11	CARBON	18K	5%	1/4W	
R867	1-216-390-11	METAL OXIDE	1.2	5%	3W	F
R868	1-249-418-11	CARBON	1.2K	5%	1/4W	
R895	1-215-866-11	METAL OXIDE	330	5%	1W	F
R900	1-247-815-91	CARBON	220	5%	1/4W	
R901	1-249-417-11	CARBON	1K	5%	1/4W	
R902	1-249-417-11	CARBON	1K	5%	1/4W	
R908	1-249-401-11	CARBON	47	5%	1/4W	
R909	1-249-437-11	CARBON	47K	5%	1/4W	
R910	1-249-437-11	CARBON	47K	5%	1/4W	
R911	1-249-425-11	CARBON	4.7K	5%	1/4W	
R912	1-249-421-11	CARBON	2.2K	5%	1/4W	
R913	1-249-425-11	CARBON	4.7K	5%	1/4W	
R914	1-249-421-11	CARBON	2.2K	5%	1/4W	
R922	1-249-406-11	CARBON	120	5%	1/4W	
R923	1-249-406-11	CARBON	120	5%	1/4W	
R925	1-249-429-11	CARBON	10K	5%	1/4W	
R926	1-249-429-11	CARBON	10K	5%	1/4W	
R1641	1-247-863-91	CARBON	22K	5%	1/4W	
R1645	1-249-439-11	CARBON	68K	5%	1/4W	
R1646	1-249-421-11	CARBON	2.2K	5%	1/4W	
R1648	1-215-875-11	METAL OXIDE	10K	5%	1W	F
R1649	1-249-429-11	CARBON	10K	5%	1/4W	
R1650	1-249-429-11	CARBON	10K	5%	1/4W	
R1651	1-249-399-11	CARBON	33	5%	1/4W	F
R1652	1-249-421-11	CARBON	2.2K	5%	1/4W	
R2701	1-247-863-91	CARBON	22K	5%	1/4W	
R2702	1-247-863-91	CARBON	22K	5%	1/4W	
R2703	1-247-863-91	CARBON	22K	5%	1/4W	
R2704	1-247-863-91	CARBON	22K	5%	1/4W	
R2705	1-249-429-11	CARBON	10K	5%	1/4W	
R2706	1-249-429-11	CARBON	10K	5%	1/4W	
R2708	1-249-429-11	CARBON	10K	5%	1/4W	
R2719	1-212-857-00	FUSIBLE	10	5%	1/4W	F

< SWITCH >

REF.NO.	PART NO.	DESCRIPTION
S601 ⚠	1-571-433-21	SWITCH, PUSH (AC POWER)
S900	1-692-979-11	SWITCH, TACTILE
S901	1-692-979-11	SWITCH, TACTILE
S902	1-692-979-11	SWITCH, TACTILE

< TRANSFORMER >

REF.NO.	PART NO.	DESCRIPTION
T801	1-427-762-11	TRANSFORMER, FERRITE (HDT)
T803	1-426-897-11	TRANSFORMER, FERRITE (PMT)
T804	1-429-288-11	HLT
T805 ⚠	8-598-986-XX	TRANSFORMER ASSY, FLYBACK
T806	1-413-059-00	TRANSFORMER, FERRITE (DFT)

REF.NO.	PART NO.	DESCRIPTION
	*A-1644-075-A	VM BOARD, COMPLETE ******************
	4-382-854-11	SCREW (M3X10), P, SW (+)

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION			REMARK
C1701	1-124-119-00	ELECT	330MF	20%	16V
C1704	1-161-830-00	CERAMIC	0.0047MF		500V
C1706	1-107-638-11	ELECT	33MF	20%	160V
C1707	1-124-907-11	ELECT	10MF	20%	50V
C1708	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C1709	1-129-702-00	FILM	0.001MF	10%	630V
C1710	1-136-203-11	FILM	0.01MF	10%	250V
C1711	1-162-318-11	CERAMIC	0.001MF	10%	500V
C1712	1-107-667-11	ELECT	2.2MF	20%	160V
C1713	1-162-318-11	CERAMIC	0.001MF	10%	500V
C1714	1-136-203-11	FILM	0.01MF	10%	250V
C1715	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C1716	1-124-907-11	ELECT	10MF	20%	50V
C1718	1-124-120-11	ELECT	220MF	20%	16V
C1719	1-124-907-11	ELECT	10MF	20%	50V
C1722	1-101-810-00	CERAMIC	100PF	5%	500V
C1723	1-104-396-11	ELECT	10MF	20%	16V
C1724	1-101-810-00	CERAMIC	100PF	5%	500V

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION
CN1701	1-774-418-11	CONNECTOR, BOARD TO BOARD 8P
CN1830	*1-564-510-11	PLUG, CONNECTOR 7P

< DIODE >

REF.NO.	PART NO.	DESCRIPTION
D1701	8-719-914-43	DIODE DAN202K
D1702	8-719-914-42	DIODE DA204K
D1704	8-719-982-37	DIODE MTZJ-39C
D1705	8-719-982-37	DIODE MTZJ-39C
D1706	8-719-914-42	DIODE DA204K
D1708	8-719-914-42	DIODE DA204K
D1709	8-719-914-42	DIODE DA204K

< COIL >

REF.NO.	PART NO.	DESCRIPTION	
L1702	1-408-410-00	INDUCTOR	12UH

< TRANSISTOR >

REF.NO.	PART NO.	DESCRIPTION
Q1701	8-729-901-59	TRANSISTOR BF199
Q1702	8-729-216-22	TRANSISTOR 2SA1162-G
Q1703	8-729-017-05	TRANSISTOR 2SA1837
Q1704	8-729-920-74	TRANSISTOR 2SC2412K-QR
Q1705	8-729-017-06	TRANSISTOR 2SC4793
Q1706	8-729-920-74	TRANSISTOR 2SC2412K-QR
Q1707	8-729-920-74	TRANSISTOR 2SC2412K-QR
Q1708	8-729-901-59	TRANSISTOR BF199
Q1710	8-729-216-22	TRANSISTOR 2SA1162-G
Q1711	8-729-039-27	TRANSISTOR BC546B
Q1712	8-729-039-25	TRANSISTOR BC556B

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION			REMARK
JR1701	1-216-296-91	METAL GLAZE	0	5%	1/10W
JR1702	1-216-296-91	METAL GLAZE	0	5%	1/10W
R1701	1-216-025-91	METAL GLAZE	100	5%	1/10W
R1702	1-249-413-11	CARBON	470	5%	1/4W

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1703	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R1704	1-249-418-11	CARBON	1.2K	5%	1/4W	
R1705	1-247-736-11	CARBON	56	5%	1/2W	F
R1706	1-249-414-11	CARBON	560	5%	1/4W	F
R1707	1-249-411-11	CARBON	330	5%	1/4W	
R1709	1-249-412-11	CARBON	390	5%	1/4W	
R1711	1-249-432-11	CARBON	18K	5%	1/4W	
R1712	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R1713	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R1714	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R1715	1-215-866-11	METAL OXIDE	330	5%	1W	F
R1716	1-249-417-11	CARBON	1K	5%	1/4W	F
R1717	1-249-432-11	CARBON	18K	5%	1/4W	
R1718	1-249-412-11	CARBON	390	5%	1/4W	
R1719	1-249-416-11	CARBON	820	5%	1/4W	
R1720	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R1721	1-249-414-11	CARBON	560	5%	1/4W	
R1723	1-249-429-11	CARBON	10K	5%	1/4W	
R1724	1-216-689-11	METAL GLAZE	39K	5%	1/10W	
R1725	1-249-413-11	CARBON	470	5%	1/4W	
R1726	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R1727	1-249-402-11	CARBON	56	5%	1/4W	F
R1730	1-216-121-91	METAL GLAZE	1M	5%	1/10W	
R1731	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R1736	1-247-807-31	CARBON	100	5%	1/4W	
R1737	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R1738	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R1739	1-216-222-00	METAL GLAZE	10K	5%	1/8W	
R1740	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R1741	1-216-166-00	METAL GLAZE	47	5%	1/8W	
R1743	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R1744	1-249-393-11	CARBON	10	5%	1/4W	
R1745	1-249-393-11	CARBON	10	5%	1/4W	

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*A-1649-015-A K BOARD, COMPLETE
****

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION			
C1252	1-126-967-11	ELECT	47MF	20%	16V
C1253	1-126-967-11	ELECT	47MF	20%	16V
C1254	1-136-165-00	FILM	0.1MF	5%	50V
C1255	1-136-165-00	FILM	0.1MF	5%	50V
C1256	1-126-953-11	ELECT	2200MF	20%	35V
C1257	1-136-165-00	FILM	0.1MF	5%	50V
C1258	1-126-953-11	ELECT	2200MF	20%	35V
C1259	1-136-165-00	FILM	0.1MF	5%	50V

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION
CN0271	*1-564-508-11	PLUG, CONNECTOR 5P
CN0272	*1-564-509-11	PLUG, CONNECTOR 6P
CN0273	*1-564-508-11	PLUG, CONNECTOR 5P

< DIODE >

REF.NO.	PART NO.	DESCRIPTION
D1250	8-719-991-33	DIODE 1SS133T-77
D1251	8-719-991-33	DIODE 1SS133T-77
D1252	8-719-991-33	DIODE 1SS133T-77
D1253	8-719-991-33	DIODE 1SS133T-77

< IC >

REF.NO.	PART NO.	DESCRIPTION
IC1250	8-759-190-89	IC TDA7265
	4-202-373-01	SPRING, IC ; IC1250
	4-202-710-01	SPACER, INSULATING ; IC1250

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1250	1-249-424-11	CARBON	3.9K	5%	1/4W	
R1251	1-249-424-11	CARBON	3.9K	5%	1/4W	
R1253	1-249-417-11	CARBON	1K	5%	1/4W	
R1256	1-249-417-11	CARBON	1K	5%	1/4W	
R1258	1-249-413-11	CARBON	470	5%	1/4W	
R1259	1-249-430-11	CARBON	12K	5%	1/4W	
R1260	1-249-430-11	CARBON	12K	5%	1/4W	
R1261	1-249-413-11	CARBON	470	5%	1/4W	
R1262	1-249-425-11	CARBON	4.7K	5%	1/4W	
R1263	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R1264	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R1265	1-249-426-11	CARBON	5.6K	5%	1/4W	
R1266	1-249-426-11	CARBON	5.6K	5%	1/4W	
R1267	1-249-429-11	CARBON	10K	5%	1/4W	
R1268	1-249-429-11	CARBON	10K	5%	1/4W	

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*A-1651-083-A J1 BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
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*A-1651-089-A J1 BOARD, COMPLETE (KV-28WS4B)
****

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION			
C551	1-101-005-00	CERAMIC	0.022MF		50V
C554	1-101-005-00	CERAMIC	0.022MF		50V
C560	1-101-005-00	CERAMIC	0.022MF		50V
C563	1-101-005-00	CERAMIC	0.022MF		50V
C567	1-102-119-00	CERAMIC	0.0015MF	10%	50V
		(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)			
C568	1-102-119-00	CERAMIC	0.0015MF	10%	50V
		(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)			

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION
CN550	*1-564-519-11	PLUG, CONNECTOR 4P
CN551	*1-564-519-11	PLUG, CONNECTOR 4P
CN552	1-564-524-11	PLUG, CONNECTOR 9P (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
	*1-564-521-11	PLUG, CONNECTOR 6P (KV-28WS4B)
CN553	*1-564-520-11	PLUG, CONNECTOR 5P (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
CN572	*1-564-521-11	PLUG, CONNECTOR 6P

< DIODE >

REF.NO.	PART NO.	DESCRIPTION
D550	8-719-923-60	DIODE MTZJ-T-77-9.1A (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
D551	8-719-923-60	DIODE MTZJ-T-77-9.1A (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
D552	8-719-923-60	DIODE MTZJ-T-77-9.1A (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)

< SOCKET >

REF.NO.	PART NO.	DESCRIPTION
J550	1-537-339-11	TERMINAL BOARD
J551	1-537-978-11	TERMINAL BOARD

J1 **T**

REF.NO.	PART NO.	DESCRIPTION	REMARK
J552	1-695-817-11	JACK BLOCK, PIN 3P	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
J553	1-569-578-11	TERMINAL, S (WITH SW)	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)

< COIL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
L550	1-402-711-11	INDUCTOR, WIDE BAND	
L552	1-402-711-11	INDUCTOR, WIDE BAND	
L554	1-402-711-11	INDUCTOR, WIDE BAND	
L556	1-402-711-11	INDUCTOR, WIDE BAND	

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
R551	1-249-426-11	CARBON 5.6K 5% 1/4W	
R552	1-249-426-11	CARBON 5.6K 5% 1/4W	
R553	1-249-393-11	CARBON 10 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R554	1-249-394-11	CARBON 12 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R555	1-249-394-11	CARBON 12 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R556	1-247-895-91	CARBON 470K 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R557	1-247-895-91	CARBON 470K 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R558	1-249-412-11	CARBON 390 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R559	1-249-412-11	CARBON 390 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R560	1-249-412-11	CARBON 390 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R561	1-249-412-11	CARBON 390 5% 1/4W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)

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*A-1652-042-A T BOARD, COMPLETE (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
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*A-1652-044-A T BOARD, COMPLETE (KV-28WS4B)
****

< CAPACITOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
C5002	1-165-319-11	CERAMIC CHIP 0.1MF 50V	
C5003	1-124-120-11	ELECT 220MF 20% 16V	
C5004	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(KV-28WS4B)
C5005	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	(KV-28WS4B)
C5006	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	(KV-28WS4B)
C5007	1-163-275-11	CERAMIC CHIP 0.001MF 5% 50V	
C5008	1-163-037-11	CERAMIC CHIP 0.022MF 10% 50V	
C5009	1-126-965-11	ELECT 22MF 20% 50V	
C5010	1-124-907-11	ELECT 10MF 20% 50V	
C5011	1-126-961-11	ELECT 2.2MF 20% 50V	
C5012	1-109-953-11	ELECT 2.2MF 20% 50V	(KV-28WS4B)
C5013	1-163-023-00	CERAMIC CHIP 0.015MF 10% 50V	
C5014	1-109-953-11	ELECT 2.2MF 20% 50V	
C5015	1-165-319-11	CERAMIC CHIP 0.1MF 50V	
C5016	1-124-120-11	ELECT 220MF 20% 16V	
C5018	1-163-237-11	CERAMIC CHIP 27PF 5% 50V	(KV-28WS4B)
C5019	1-104-664-11	ELECT 47MF 20% 25V	

< FILTER >

REF.NO.	PART NO.	DESCRIPTION	REMARK
CF5001	1-760-106-11	FILTER, CERAMIC	
CF5002	1-567-100-00	FILTER, CERAMIC	(KV-28WS4B)
CF5003	1-760-450-21	FILTER, CERAMIC	

< CONNECTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
CN5001	*1-564-508-11	PLUG, CONNECTOR 5P	
CN5002	*1-564-509-11	PLUG, CONNECTOR 6P	

< DIODE >

REF.NO.	PART NO.	DESCRIPTION	REMARK
D5002	8-719-421-57	DIODE MA73-TX	
D5003	8-719-421-57	DIODE MA73-TX	(KV-28WS4B)
D5004	8-719-421-57	DIODE MA73-TX	

< IC >

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC5001	8-759-398-24	IC U2860B-BFPG3	
IC5002	8-752-072-94	IC CXA1875AM-T4	

< COIL >

REF.NO.	PART NO.	DESCRIPTION	REMARK
L5001	1-408-406-00	INDUCTOR 5.6UH	
L5002	1-408-406-00	INDUCTOR 5.6UH	
L5003	1-412-751-11	INDUCTOR 18UH	(KV-28WS4B)

< TRANSISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q5001	8-729-920-74	TRANSISTOR 2SC2412K-QR	(KV-28WS4B)
Q5002	8-729-039-67	TRANSISTOR BSS83	(KV-28WS4B)
Q5004	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q5005	8-729-901-01	TRANSISTOR DTC144EK-T146	(KV-28WS4B)
Q5006	8-729-901-01	TRANSISTOR DTC144EK-T146	(KV-28WS4B)
Q5007	8-729-920-74	TRANSISTOR 2SC2412K-QR	(KV-28WS4B)
Q5008	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q5009	8-729-901-01	TRANSISTOR DTC144EK-T146	
Q5010	8-729-901-01	TRANSISTOR DTC144EK-T146	(KV-28WS4B)
Q5011	8-729-901-01	TRANSISTOR DTC144EK-T146	
Q5012	8-729-901-01	TRANSISTOR DTC144EK-T146	(KV-28WS4B)
Q5014	8-729-038-96	TRANSISTOR IMZ1A-T109	
Q5015	8-729-216-22	TRANSISTOR 2SA1162-G	(KV-28WS4B)
Q5016	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q5017	8-729-216-22	TRANSISTOR 2SA1162-G	

< RESISTOR >

REF.NO.	PART NO.	DESCRIPTION	REMARK
R5001	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R5002	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R5004	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R5005	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R5007	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R5008	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R5009	1-208-774-11	METAL CHIP 470 0.50% 1/10W	(KV-28WS4B)
R5010	1-208-774-11	METAL CHIP 470 0.50% 1/10W	(KV-28WS4B)
R5011	1-208-774-11	METAL CHIP 470 0.50% 1/10W	(KV-28WS4B)
R5012	1-216-073-00	METAL GLAZE 10K 5% 1/10W	(KV-28WS4B)
R5015	1-216-295-91	METAL GLAZE 0 5% 1/10W	(KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)
R5016	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	

The components identified by shading and marked ⚠ are critical for safety.
Replace only with the part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION			REMARK
R5017	1-216-035-00	METAL GLAZE	270	5%	1/10W
R5018	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R5020	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R5021	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R5022	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R5023	1-216-049-91	METAL GLAZE	1K	5%	1/10W (KV-28WS4B)
R5024	1-216-089-91	METAL GLAZE	47K	5%	1/10W (KV-28WS4B)
R5025	1-216-089-91	METAL GLAZE	47K	5%	1/10W (KV-28WS4B)
R5026	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R5027	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R5028	1-216-039-00	METAL GLAZE	390	5%	1/10W
R5029	1-216-039-00	METAL GLAZE	390	5%	1/10W (KV-28WS4B)
R5030	1-216-039-00	METAL GLAZE	390	5%	1/10W
R5031	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R5032	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W (KV-28WS4B)
R5033	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R5034	1-216-025-91	METAL GLAZE	100	5%	1/10W
R5035	1-216-025-91	METAL GLAZE	100	5%	1/10W
R5036	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R5037	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R5041	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R5042	1-216-081-00	METAL GLAZE	22K	5%	1/10W (KV-28WS4B)
R5043	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R5044	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R5045	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R5046	1-216-073-00	METAL GLAZE	10K	5%	1/10W (KV-28WS4B)
R5047	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R5048	1-216-073-00	METAL GLAZE	10K	5%	1/10W (KV-28WS4B)
R5052	1-216-041-00	METAL GLAZE	470	5%	1/10W
R5053	1-216-041-00	METAL GLAZE	470	5%	1/10W
R5054	1-216-041-00	METAL GLAZE	470	5%	1/10W
R5055	1-216-025-91	METAL GLAZE	100	5%	1/10W
R5056	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W (KV-28WS4B)
R5057	1-216-025-91	METAL GLAZE	100	5%	1/10W (KV-28WS4B)
R5058	1-216-033-00	METAL GLAZE	220	5%	1/10W
R5059	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R5060	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R5061	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R5062	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R5063	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W

< TUNER >

REF.NO.	PART NO.	DESCRIPTION	REMARK
TU5001	1-693-338-21	TUNER (TUVIF) (AEP) (KV-28WS4A/28WS4D/28WS4E/28WS4K/28WS4R)	
	1-693-340-21	TUNER (TUVIF) (FR) (KV-28WS4B)	

****

MISCELLANEOUS
****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	⚠ 1-411-893-11	COIL, DEGAUSSING	
	1-452-032-00	MAGNET, DISK; 10MM Ø	
	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø	
	1-452-724-11	COIL, NA ROTATION (RT-165)	
	⚠ 1-453-222-11	TRANSFORMER ASSY, FLYBACK	(NX-4003/U2B4)
	1-505-154-11	SPEAKER (6.5CM)	
	1-505-155-11	SPEAKER (10CM)	
	⚠ 1-251-317-31	CAP ASSY, HIGH-VOLTAGE	
	⚠ 1-571-433-21	SWITCH, PUSH (AC POWER)	
	1-693-338-21	TUNER (TUVIF) (AEP) (KV-28WS4A/28WS4B/28WS4D/28WS4E/28WS4K/28WS4R)	
	1-693-340-21	TUNER (TUVIF) (FR) (KV-28WS4B)	
	⚠ 1-751-680-11	CORD, POWER (WITH NOISE FILTER) 2.5A/250V	
	⚠ 8-451-433-11	DEFLECTION YOKE (Y28GICM)	
	⚠ 8-453-005-31	NECK ASSY, (NA297-M3)	
V901	⚠ 8-737-763-05	PICTURE TUBE (SD-284T)(W66LGY011X)	

****

ACCESSORIES AND PACKING MATERIALS
****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	1-765-654-11	CABLE, SPEAKER	
	*4-050-191-01	CUSHION (UPPER) (ASSY)	
	*4-050-192-11	CUSHION (LOWER) (ASSY)	
	*4-050-193-01	INDIVIDUAL CARTON	
	4-203-585-41	MANUAL, INSTRUCTION (KV-28WS4A)	(ITALIAN)
	4-203-585-51	MANUAL, INSTRUCTION (KV-28WS4B)	(FRENCH)
	4-203-585-11	MANUAL, INSTRUCTION (KV-28WS4D) (GERMAN/ENGLISH/DUTCH/FRENCH/ITALIAN/GREEK/TURKISH)	
	4-203-585-71	MANUAL, INSTRUCTION (KV-32WS4E) (PORTUGUESE/DANISH/SWEDISH/NORWEGIAN/FINNISH/SPANISH/FRENCH/DUTCH/GERMAN)	
	4-203-585-91	MANUAL, INSTRUCTION (KV-28WS4K/28WS4R) (ENGLISH/RUSSIAN/BULGARIAN)	
	*4-395-957-01	BAG, PROTECTION	

REMOTE COMMANDER
****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	1-473-692-11	COMMANDER, STANDARD TYPE (RM-862)	

****

SONY

Sony Deutschland GmbH
Hugo-Eckener-Straße 20, D-50829 Köln-Ossendorf, Postfach 3012 49, 50782 Köln
Telefon (02 21) 5966-0, Telefax (02 21) 59 66-349, ISDN Videokonferenz (02 21) 9 56 10 10/03/06

Sehr geehrte Kundin, sehr geehrter Kunde,

zusammen mit dem bestellten Service Manual erhalten Sie eine Einstellanleitung für das entsprechende Chassis-Modell.

Diese wurde von unseren "Spezialisten" erstellt und beinhaltet die korrekten Einstellparameter der folgenden Gerätetypen:

KV-25C3D

KV-29C3D

KV-28WS4D

KV-32WS4D

KV-28WX2D

KV-32WX2D

Nach Austausch des Speicherbausteins **IC1003** (A-BOARD) oder einem Reset ist es erforderlich, das Gerät neu abzugleichen.
Alle erforderlichen Schritte sind in dieser Broschüre aufgelistet.

Wir hoffen, Ihnen die Reparatur- und Einstellzeit an diesem komplexen Chassis mit Hilfe der Unterlage zu verkürzen und verbleiben,

Mit freundlichen Grüßen
Ihr Sony Service Team

Stand: 99-06-09

NVM ADJUSTMENT STANDARD AE-4 CHASSIS

KV-25C3D
KV-25C3E
KV-25C3A
KV-25C3B

KV-29C3D
KV-29C3E
KV-29C3A
KV-29C3K
KV-29C3R
KV-29C3B

KV-28WX2D
KV-28WX2E
KV-28WX2A
KV-28WX2B

KV-32WX2D
KV-32WX2E
KV-32WX2A
KV-32WX2B
KV-32WX2U

KV-28WS4A
KV-28WS4E
KV-28WS4B
KV-28WS4D
KV-28WS4K
KV-28WS4R

KV-32WS4U
KV-32WS4A
KV-32WS4E
KV-32WS4F
KV-32WS4D
KV-32WS4K
KV-32WS4R

Erstellt von J.G.Esser_TT und W.Wagner_TVE/TPE

Impressum

Herausgeber
Sony, Technical Training

Änderungen vorbehalten. Für Druck- und Informationsfehler übernehmen wir keine Haftung.

Stand: 09/04/97

Inhaltsverzeichnis

Allgemeines		Seite 01 - 05
Software Übersicht AE-4		Seite 06 - 06
Init TV		Seite 07 - 10
TV set configuration TT13		Seite 11 - 15
Pip, Lumisponder & AutoWide		Seite 16 - 16
Sub Adjust		Seite 17 - 20
Video Proc	TDA 4780	Seite 21 - 22
Col Dec Main	TDA 9144	Seite 23 - 24
Deflect. Cont	SDA 9361	Seite 25 - 27
Col Dec Sub	TDA 9143	Seite 28 - 28
Feature Box	S87C654	Seite 29 - 32
AI	TDA 9170	Seite 33 - 33
DA	SDA 9280	Seite 34 - 36
Single PIP	SDA 9288	Seite 37 - 39
Sound		Seite 40 - 45
Line23 det		Seite 46 - 48

Vorwort

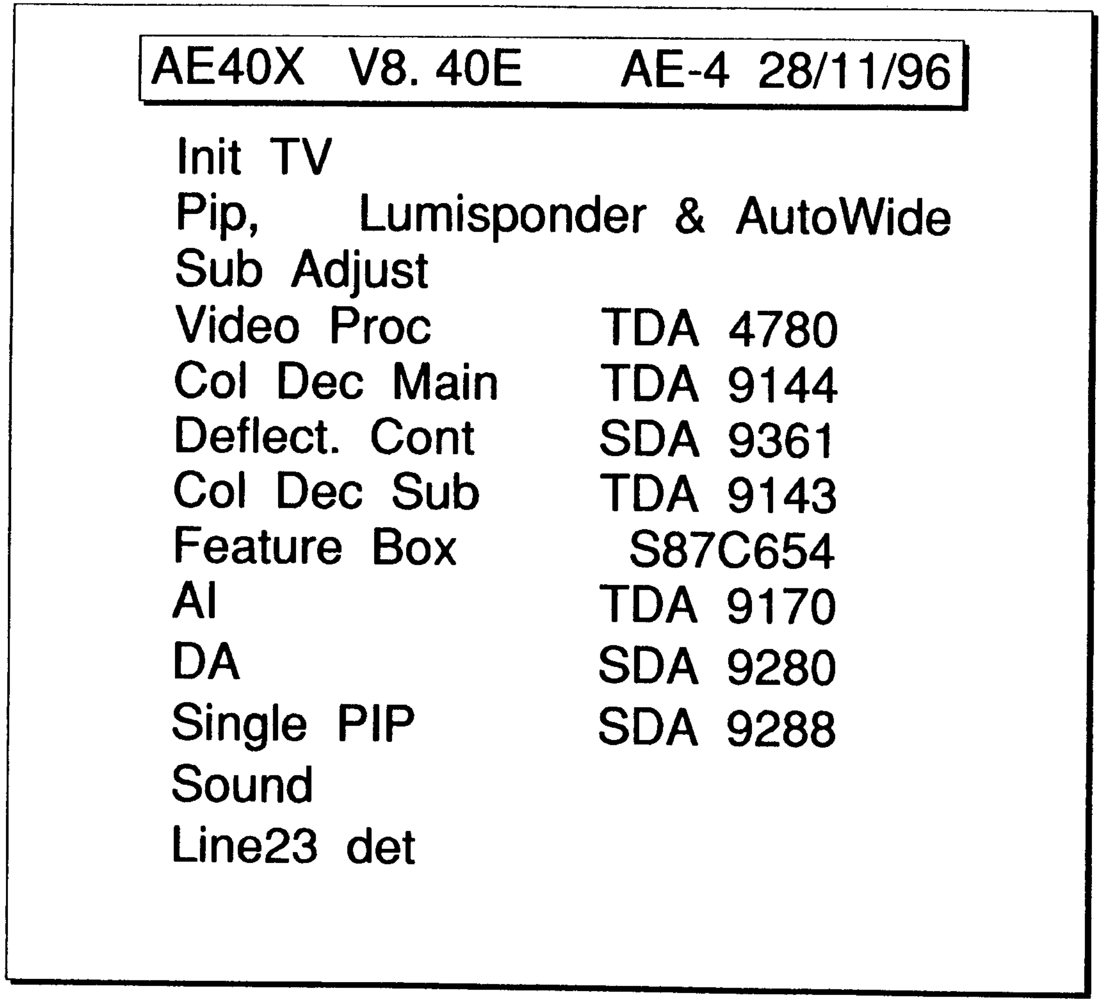
In erster Linie beinhaltet diese Einstellhilfe die korrekten Einstellparameter aller auf der Titelseite aufgeführten Gerätetypen. Um einheitliche Ergebnisse gewährleisten zu können, muß die Überprüfung bzw. Korrektur der Einstellwerte im Wide Mode erfolgen. **Die Einstellhilfe hat Gültigkeit für die auf Seite 6 aufgeführten Software-Versionen.**

Darüber hinaus wurden in dieser Unterlage die im ROM abgelegten Grunddaten für die Software-Version V8.40E hinzugefügt. Ein neues EEPROM wird nach dem Einschalten automatisch mit diesen Daten geräteintern vorprogrammiert. Im Vergleich dazu stehen dann noch die Grunddaten, die durch den Befehl TT49 (nur Produktion) auftreten können sowie eine dritte Kategorie von Grunddaten, die ausgelöst durch spezielle TT-Befehle (siehe TT76, 77, 78, 81, 82, 84, 85, 86, 87) nur Daten eines vorbestimmten Schaltkreises überschreiben.

Nach Auswertung aller zu Verfügung stehenden Daten, können Abweichungen zum Originalabgleich erkannt und durch graue Felder bzw. durch ein **K** (Korrektur) gekennzeichnet werden. Nur diese Einträge bedürfen nach einem EEPROM-Austausch noch einer Aktualisierung, womit sich der Zeitaufwand im Servicefall durch weniger zu kontrollierende Einträge minimieren läßt.

Da sich Geräte mit anderslautenden Software-Versionen von der Abgleichprozedur zur Version V8.40E geringfügig unterscheiden könnten, sollten Sie nach einem EEPROM-Austausch alle Einstellungen Punkt für Punkt mit der Einstellhilfe vergleichen.

Service Menü AE-4



```
AE40X  V8. 40E      AE-4  28/11/96

Init TV
Pip,     Lumisponder & AutoWide
Sub Adjust
Video Proc          TDA 4780
Col Dec Main        TDA 9144
Deflect. Cont       SDA 9361
Col Dec Sub         TDA 9143
Feature Box          S87C654
AI                  TDA 9170
DA                  SDA 9280
Single PIP          SDA 9288
Sound
Line23 det
```

Official	**Version**	**Datum**	**Modelle**	**Chassis**
AE401		20.09.1996	**WX, C3 only**	**AE4**
AE401A		24.09.1996		
AE401B		25.09.1996		
AE401C		26.09.1996		
AE401D		27.09.1996		
AE401E		02.10.1996		
AE401F		09.10.1996		
AE401G		10.10.1996		
AE401H		11.10.1996		
AE401K		16.10.1996		
AE401L		23.10.1996		
AE401M		24.10.1996		
AE401N		01.11.1996		
AE402	V8.39i	08.11.1996	**WS only**	
AE402B		14.11.1996		
AE40X	V8.40B	20.11.1996	**WX, WS, C3**	
AE40X	V8.40C	25.11.1996		
AE40X	V8.40D	26.11.1996		
AE40X	V8.40E	28.11.1996		
AE40X	V8.40F	28.11.1996		
AE40X	V8.40G	11.12.1996		
AE40X	V8.40H	11.12.1996		
AE40X	V8.40i	16.12.1996		
AE403	V8.40K	19.12.1996		

Nr.	Funktion	Initialization / INIT BYTE							
		EEPROM (neu)	nach Eingabe von TT49	Destination (Land)/Serienkonfiguration					siehe Text
				B	U	E (16:9 only)		OTHER	
01	B / G	on	on	on	off	on		on	K
02	I	on	on	on	on	on		off	K
03	D / K	off	off	on	off	on		on	K
04	AUS	off	off	off	off	off		off	
05	L	on	on	on	off	on		off	K
06	SAT	off	off	off	off	off		off	
07	M	off	off	off	off	off		off	

z.B. KV-...D

K = Korrektur
Nach einem **EEPROM-Austausch** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Schalter nach Serienkonfiguration erfolgen. Siehe auch Seite 13-15 (**TT13 / Test Mode 2** _Display of Software Version and TV set configuration).
Die SAT-Funktion kann nicht aktiviert werden, sie wird durch die Software sofort wieder in den Aus-Zustand (off) zurückgeschaltet.

Kennzeichnet nicht die Empfangsnorm, sondern dient als Länderschlüssel.

MODEL	Destination	Code	Empfangsnorm
KV-32WS4**A**	Italian	**OTHER**	
KV-32WS4**D**	AEP		z.B. B/G (CCIR / (VHF & UHF), D/K (Ostnorm / OIRT)
KV-32WS4**E**	Spanish		
KV-32WS4**K**	OIRT		
KV-32WS4**R**	OIRT		
KV-32WS4**B/FR**	French	**B/FR**	
KV-32WS4**U**	UK (England)	**U**	

Siehe auch Service Manual (Titelseite)

Nr.	Funktion	Initialization / MODEL INIT							siehe Text
		EEPROM (neu)	nach Eingabe von TT49	Model / Gerätetyp (Serienkonfiguration)					
				C25/C29	28/WX2	32WX2	28WS4	32WS4	
01	SCART 1	on	on	on	on	on	on	on	
02	SCART 2	on	on	on	on	on	on	on	
03	FRONT IN 3	on	on	on	on	on	on	on	
04	SCART 4	off	off	off	off	off	off	off	
05	VGA	off	off	off	off	off	off	off	
06	WIDE SCREEN	on	on	off	on	on	on	on	K
07	W32 MODEL	off	off	off	off	on	off	on	K
08	PICTURE ROTATION	on	on	on	on	on	on	on	
09	AUTO WIDE	off	off	off	on	on	on	on	K
10	AUTO WIDE DEF. SMART	off	off	off	on	on	on	on	K
11	RUSSIAN SOUND CARRIER	off	off	off	off	off	off	off	

K = Korrektur

Nach einem **EEPROM-Austausch** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Schalter wie vorgegeben (Serienkonfiguration) erfolgen. Siehe auch Seite 13-15 (**TT13 / Test Mode 2** _Display of Software Version and TV set configuration).

Nr.	Funktion	Initialization / FEATURES							siehe Text
		EEPROM (neu)	nach Eingabe von TT49	Model / Gerätetyp (Serienkonfiguration)					
				C25/C29	28/32WX	28/32WS			
01	PAL COMB	on	on	off	off	on			K
02	RGB PRIORITY	off	off	off	off	off			
03	60 PRGS	off	off	off	off	off			
04	LINE23 DET	off	off	off	on	on			K
05	LUMISPONDER	off	off	on	off	off			K
06	AI	on	on	off	on	on			K
07	SRS - DOLBY	off	off	off	off	off			
08	DOLBY PROLOGIC	off	off	off	off	on			K
09	SOUND EFFECTS	off	off	off	off	off			
10	EQUALIZER	off	off	off	off	on			K
11	SUB TUNER	on	on	off	off	on			K
12	PIP	off	off	on	off	off			K
13	PAP	on	on	off	off	on			K
14	MULTI PIP	off	off	off	on	on			K
15	PAT	off	off	off	on	on			K

K = Korrektur

Nach einem **EEPROM-Austausch** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Schalter wie vorgegeben (Serienkonfiguration) erfolgen. Siehe auch Seite 13-15 (**TT13** / **Test Mode 2** _Display of Software Version and TV set configuration).

INIT TV _ Initialization

Nr.	Funktion	Initialization / LANGUAGES							siehe Text
		EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	Destination (Land)/Serienkonfiguration				
						R	K	A/B/D/E/U	
01	Nat. Opt. Char	0	0	3		4	1	3	K
02	Menü Language	West	West	West		East	East	West	K

z.B.
KV-32WS4D

Beispiel:

K = Korrektur
Nach einem **EEPROM-Austausch** muß zum Beispiel bei dem Gerätetyp KV-32WS4D eine Aktualisierung der grau gekennzeichneten Funktion **01** erfolgen. Den hierfür benötigten Zahlenwert können Sie der oben aufgeführten Tabelle (siehe Serienkonfiguration) entnehmen. Siehe auch Seite 13-15 (**TT13 / Test Mode 2** _Display of Software Version and TV set configuration).
Eine weitere Korrektur wird erforderlich, wenn die Gerätetypen mit den Buchstaben **R** und **K** enden. Beispiel KV-...**K**. Bei diesen Geräten ist dann zusätzlich noch die Funktion 02 (Menü Language) von West auf East umzuschalten.

Der Befehl TT49 nimmt in diesem Menü eine Sonderstellung ein. Nach Eingabe von TT49 würden sich die Einstellwerte eines Seriengerätes nicht verändern. Einstellwerte die sich nach einem EEPROM-Austausch einstellen, werden durch Eingabe von TT49 ebenfalls nicht verändert.

Der Eintrag [3] bewirkt, daß in der Übersicht (TT13/Test Mode 2) im ersten Block/Zeile 4 der Eintrag **TXT CHAR. 55** geschrieben wird. **Character Set 55 = West Europe/Turkish (D-Version).**

Die Umschaltung (**Nat. Opt. Char** = **3**) kann parallel auch mit **TT29 / Test Mode 2** erfolgen.

Menü Language **ALL**----East----West

Die **ALL-Einstellung** im Menü Language (Sprachenmenü) darf für Anwender nicht freigeschaltet werden. Sie ist nur der Fertigung für Testzwecke vorbehalten.

TV set configuration (TT13)

Die produktionsseitig programmierten Initialisierungsdaten sowie die aktuelle Softwareversion können jetzt durch Eingabe des Befehls TT13 (Test Mode 2) auf dem Bildschirm dargestellt werden. Diese Auflistung gibt zusammengefaßt alle wichtigen Voreinstellungen wieder, die im Service-Menü unter dem Menüpunkt Init TV eingestellt wurden.
Eine Aktualisierung dieser Daten kann im Fehlerfall (z.B. NVM-Datenverlust) **nur** im Service-Menü (Init TV) durchgeführt werden.

Einstellhilfen mit den gerätespezifischen Initialisierungsdaten geben hier Hilfestellung und ermöglichen einen korrekten Abgleich. (Siehe auch Seite 7-10 oder 13-15).

Durch TT-Befehle (Test Mode 2) hervorgerufene Einträge sind nachfolgend noch einmal gesondert gekennzeichnet.

Funktion		Wo wird eingestellt?
PRGS.	[ ]	siehe Initialization/FEATURES
Level 2.5	[ ]	siehe **Test Mode 2 (TT18)**
RAM SPC	[ ]	kein Zugriff (nur Produktion)
TXT CHAR.	[ ]	siehe Initialization/LANGUAGES oder **Test Mode 2 (TT27, TT29 und TT89)**
PCF	[ ]	siehe Initialization/FEATURES

SUB TUNER	[ ]	siehe Initialization/FEATURES
PIP	[ ]	siehe Initialization/FEATURES
PAP	[ ]	siehe Initialization/FEATURES
RGB PRTY	[ ]	siehe Initialization/FEATURES
EQUALIZER	[ ]	siehe Initialization/FEATURES
DSP	[ ]	kein Zugriff (nur Produktion)
DOLBY	[ ]	siehe Initialization/FEATURES
Rotation	[ ]	siehe Initialization/MODEL INIT oder **Test Mode 2 (TT71)**
WIDE SCREE	[ ]	siehe Initialization/MODEL INIT
SCART 1	[ ]	siehe Initialization/MODEL INIT
SCART 2	[ ]	siehe Initialization/MODEL INIT
FRONT IN	[ ]	siehe Initialization/MODEL INIT
SCART 4	[ ]	siehe Initialization/MODEL INIT
SYS B/G	[ ]	siehe Initialization/INIT BYTE
SYS I	[ ]	siehe Initialization/INIT BYTE
SYS L	[ ]	siehe Initialization/INIT BYTE
SYS D/K	[ ]	siehe Initialization/INIT BYTE
SYS M	[ ]	siehe Initialization/INIT BYTE
SYS AUS	[ ]	siehe Initialization/INIT BYTE
SYS SAT	[ ]	siehe Initialization/INIT BYTE
PHIL BUG	[ ]	siehe **Test Mode 2 (TT37/TT13)**

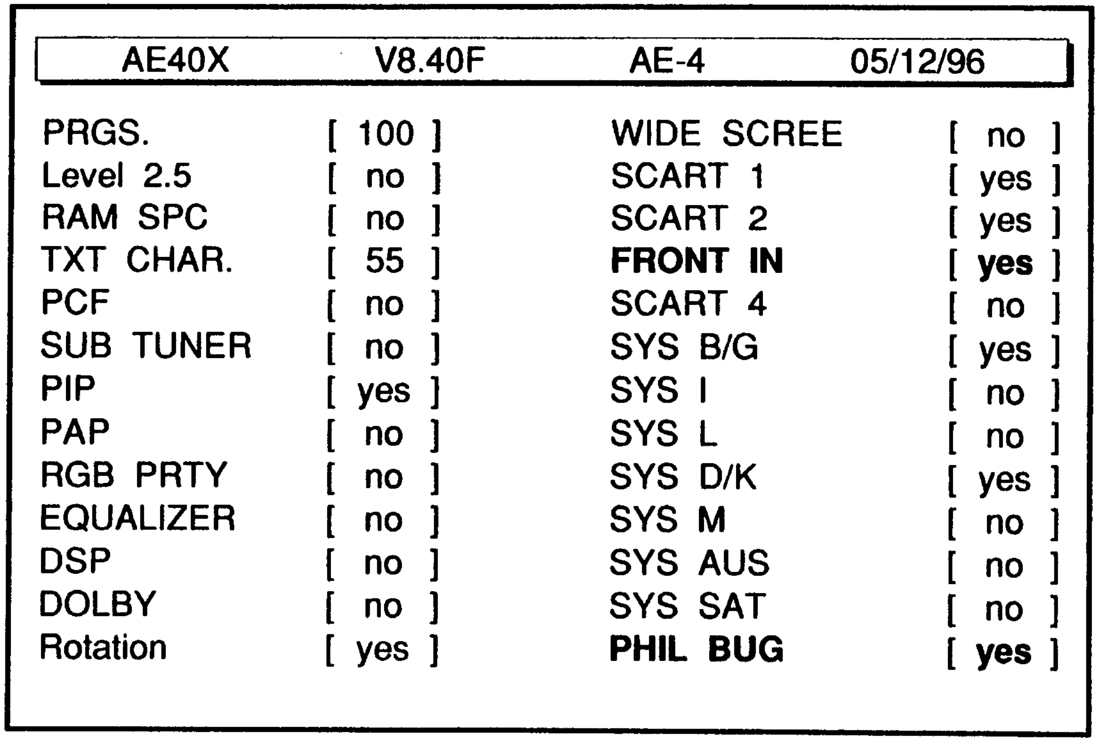
TV set configuration TT13/ Initialisierungsvorgaben zu KV-28/32WS4**D**

AE40X	V8.40E	AE-4	28/11/96
PRGS.	[100]	WIDE SCREE	[yes]
Level 2.5	[yes]	SCART 1	[yes]
RAM SPC	[no]	SCART 2	[yes]
TXT CHAR.	[55]	**FRONT IN**	[**yes**]
PCF	[yes]	SCART 4	[no]
SUB TUNER	[yes]	SYS B/G	[yes]
PIP	[no]	SYS I	[no]
PAP	[yes]	SYS L	[no]
RGB PRTY	[no]	SYS D/K	[yes]
EQUALIZER	[yes]	SYS M	[no]
DSP	[no]	SYS AUS	[no]
DOLBY	[yes]	SYS SAT	[no]
Rotation	[yes]	**PHIL BUG**	[**yes**]

TV set configuration TT13/ Initialisierungsvorgaben zu KV-28/32WX2**D**

AE401K	V8.38L	AE-4	16/10/96
PRGS.	[100]	WIDE SCREE	[yes]
Level 2.5	[no]	SCART 1	[yes]
RAM SPC	[no]	SCART 2	[yes]
TXT CHAR.	[55]	**FRONT IN**	[**yes**]
PCF	[no]	SCART 4	[no]
SUB TUNER	[no]	SYS B/G	[yes]
PIP	[no]	SYS I	[no]
PAP	[no]	SYS L	[no]
RGB PRTY	[no]	SYS D/K	[yes]
EQUALIZER	[no]	SYS M	[no]
DSP	[no]	SYS AUS	[no]
DOLBY	[no]	SYS SAT	[no]
Rotation	[yes]	**PHIL BUG**	[yes]

TV set configuration TT13/ Initialisierungsvorgaben zu KV-25/29C3**D**



AE40X	V8.40F	AE-4	05/12/96
PRGS.	[100]	WIDE SCREE	[no]
Level 2.5	[no]	SCART 1	[yes]
RAM SPC	[no]	SCART 2	[yes]
TXT CHAR.	[55]	**FRONT IN**	[**yes**]
PCF	[no]	SCART 4	[no]
SUB TUNER	[no]	SYS B/G	[yes]
PIP	[yes]	SYS I	[no]
PAP	[no]	SYS L	[no]
RGB PRTY	[no]	SYS D/K	[yes]
EQUALIZER	[no]	SYS M	[no]
DSP	[no]	SYS AUS	[no]
DOLBY	[no]	SYS SAT	[no]
Rotation	[yes]	**PHIL BUG**	[**yes**]

Nr.	Funktion	PIP, LUMISPONDER & AUTOWIDE							siehe Text
		EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	Serienkonfiguration				
					All	C-Serie	WX-Serie	WS-Serie	
01	PIP CONTRAST	+4	+4	0	0	X			K
02	PIP LEFT	+20	+20	-20	-20	X			K
03	PIP RIGHT	+20	+20	-20	-20	X			K
04	PIP UP	+20	+20	0	0	X			K
05	PIP DOWN	+20	+20	0	0	X			K
06	LUMISPONDER CURVE	2	2	1	1	X			K
07	AUTOWIDE LOGO	on	on	on	on		X	X	
08	AUTOWIDE SUBTITLE	on	on	on	on		X	X	
09	AUTOWIDE ZOOM SHIFT	15	15	7	7		X	X	K

K = **Korrektur**

Nach einem **EEPROM-Austausch** müssen die grau gekennzeichneten Felder mit den Werten der Serienkonfiguration aktualisiert werden.

Der Befehl TT49 nimmt bei diesem Menü eine Sonderstellung ein. Nach Eingabe von TT49 würden sich die Einstellwerte eines Seriengerätes nicht verändern. Einstellwerte die sich nach einem EEPROM-Austausch einstellen, werden durch Eingabe von TT49 ebenfalls nicht verändert.

Nr.	Funktion	Sub Adjustment							siehe Text
		EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	Serienkonfiguration				
					All	4:3	16:9 FR	16:9 others	
01	Sub Picture	0	0	0		-5	-2	-2	K
02	Sub Color	0	0	0		Adj.	-2	-2	K
03	Sub Brightness	0	0	0		-10	-10	-7	K
04	4 / 3 Center	0	0	0	0				
05	PAP H Center	0	0	0	+14				K
06	PAP HWE Offset	0	0	0	-5				K
07	Menue / Text H - Pos	-1	-1	-2	-2				K
08	PAT RGB Offset	7	7	6		0	Adj.	Adj.	K
09	PAT RGB Gain	31	31	30		0	Adj.	Adj.	K
10	Extra Framing Window	255	255	255	255				

K = Korrektur

Nach einem EEPROM-Austausch müssen die grau gekennzeichneten Felder mit den Werten der Serienkonfiguration aktualisiert werden. (Funktion **01-03, 05-09**).

Der Befehl TT49 nimmt bei diesem Menü eine Sonderstellung ein. Bei einem Seriengerät verändern sich nach Eingabe von TT49 die Einstellwerte der Funktionen 01-03 und 05-09. Einstellwerte die sich nach einem EEPROM-Austausch einstellen, werden durch Eingabe von TT49 nicht verändert.

Zu Funktion **01-03:**

Die Funktionen **Sub Picture, Sub Color** und **Sub Brightness** werden nicht wie im Service Manual beschrieben abgeglichen, sondern durch Eingabe von optimierten Werten voreingestellt. Eine Ausnahme ergibt sich bei 4:3-Geräten, hier ist die Funktion **Sub Color** wie auf Seite 19 beschrieben abzugleichen.

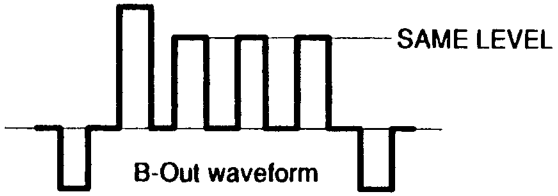
Zu Funktion **04-07:**
Die für alle Geräte aufgeführten Einstellwerte sind optimierte Vorgaben und dürfen im Servicefall nicht verändert werden.

Zu Funktion **08-09:**
Adj. = Abgleich erforderlich (Siehe Seite 19/20).

Zu Funktion **02** (**Sub Color / Adj**ustment nur bei **4:3**):

Sub Color Adjustment

1. Input a PAL color bar signal.
2. Connect an oscilloscope to **pin 3** of **CN3703** / C-Board (z.B. KV-29**C3**).
2. Connect an oscilloscope to **pin 3** of **CN0403** / C-Board (z.B. KV-32**WX2** or KV-32**WS4**).
3. Enter into **Service mode**.
4. Choose **Sub Adjustment**.
5. Enter into **Sub Color** mode.
6. Adjust the sub colour data so that cyan, magenta and blue colour bars are of equal height.



Achtung: Bei 16:9-Modellen ist kein Abgleich erforderlich, hier wird der Einstellwert mit -2 vorgegeben (siehe auch Seite 17).

Zu Funktion **08-09:**

PAT RGB Offset-und PAT RGB Gain-Einstellung

1. Im Test Mode 2 TT75 aufrufen (Informationszeile L = XX_G = XX wird im Text sichtbar).

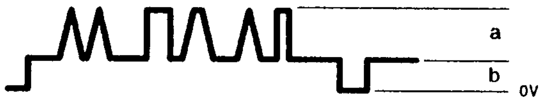
2. PAT RGB Offset = **L** (Joystick/**ROT**: Cursor **nach links** bewegen bedeutet, der Einstellwert wird **kleiner**. Joystick/**GELB**: Cursor **nach rechts** bewegen bedeutet, der Einstellwert wird **größer**).

3. PAT RGB Gain = **G** (Joystick/**BLAU**: Cursor **nach unten** bewegen bedeutet, der Einstellwert wird **kleiner**. Joystick/**GRÜN**: Cursor **nach oben** bewegen bedeutet Einstellwert wird **größer**).

To get correct working PaT function the text level of Megatext has too much tolerance.Therefore this level has to be adjusted in CBA. Adjustable is the **gain (a)** and the **offset value (b)** of the output stages R, G and B of Megatext. The output signals looks like diagramm 1. In CBA the levels for RGB **(Pin 1,3,5/CN412)** has to be adjusted:

a to 1,35V, **b** to 0,95V (Einstellen mit TT75/ siehe auch Seite 19).

Diagramm 1



This has to be done in PaT mode. Be careful the 5V supply voltage of A-Board should be correct. The result has to be stored in NVM Bank AE MTX Byte 4 24hex. Bit 0-2 is **b**, Bit 3-7 is **a**.

Nr.	Funktion	Einstellwerte des TDA4780						siehe Text
			nach Eingabe von		Serienkonfiguration			
		EEPROM (neu)	TT49	TT84	All	4:3	16:9	
01	BRT	31	31	31	31			
02	COL	31	31	31	31			
03	PIC	53	53	53	53			
04	HUE	31	31	31	31			
05	R GAIN	37	37	37		40	31	K
06	G GAIN	16	16	16	Adj.			K
07	B GAIN	8	8	8	Adj.			K
08	R LVL REF	31	31	31	31			
09	G LVL REF	31	31	31	Adj.			K
10	B LVL REF	31	31	31	Adj.			K
11	PEAK DRV LIMIT	63	63	63		55	48	K
12	GAMMA	31	31	31		31	0	K
13	SCP ON = 3LEV OFF = 2LEV	off	off	off	off			
14	DELAY	off	off	off	off			
15	DATA BUF	off	off	off	off			
16	NTSC MATRIX	off	off	off	off			
17	HDTV	off	off	off	off			
18	FSBL	off	off	off	off			
19	AUTO CUT OFF	on	on	on	on			
20	FSW 2 DIS	off	off	off	off			
21	FSW 2	off	off	off	off			
22	FSW 1 DIS	off	off	off	off			
23	FSW 1	off	off	off	off			
24	ADAPT BLACK	off	off	off		on	off	

Nr.	Funktion	Einstellwerte des TDA4780						siehe Text
			nach Eingabe von		Serienkonfiguration			
		EEPROM (neu)	TT49	TT84	All	4:3	16:9	
25	Y HIGH 1V	off	off	off	off			
26	MOD2	off	off	off	off			
27	BLUE STRETCH	on	on	off	*			
28	VM OUT	off	off	off	off			
29	PEAK DRV ABS	on	on	on	on			
30	TIME CNST PEAK LIMIT	off	off	off	off			

K = Korrektur
Nach einem **EEPROM-Austausch**, nach Eingabe von **TT84** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Funktionen **05-07** und **09-12** nach Abgleichanleitung erfolgen.

Zu Funktion 27: * (Switch off for whitebalance adjustment and switch on for shipping TT08 / Test Mode 2).

Nr.	Funktion	Einstellwerte des TDA9144				siehe Text
			nach Eingabe von		Serienkonfiguration	
		EEPROM (neu)	TT49	TT85	All	
01	Source	2	2	2	0	K
02	Trap bypass	off	off	off	off	
03	Comb Filter	on	on	on	off	K
04	Loop closed	on	on	on	on	
05	Time Const	0	0	0	1	K
06	XTAL	3	3	3	3	
07	Field Frq	3	3	3	3	
08	OutPort A	off	off	off	off	
09	OutPort B	off	off	off	off	
10	Standard	0	0	0	0	
11	Forced RGB	off	off	off	off	
12	Enable FS	off	off	off	off	
13	External RGB clamp	off	off	off	off	
14	Hue	32	32	32	31	K
15	Line Lock HA mode	on	on	on	on	
16	Force wide window	off	off	off	off	
17	Ext. MACP chroma filt	off	off	off	off	
18	Pal+ Helper demod.	off	off	off	off	
19	Pal+ Helper blank	0	0	0	0	
20	Lumi to Helper delay	0	0	0	1	K
21	Blanked Sync on Yout	off	off	off	off	
22	Baseband delay bypass	off	off	off	off	
23	Low Power Standby	off	off	off	off	
24	MacroVision gating	on	on	on	off	K

Nr.	Funktion	Einstellwerte des TDA9144				
			nach Eingabe von		Serienkonfiguration	siehe Text
		EEPROM (neu)	TT49	TT85	All	
25	Lumi delay control	7	7	7	9	K

K = Korrektur
Nach einem **EEPROM-Austausch**, nach Eingabe von **TT85** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Funktionen **01, 03, 05, 14 , 20, 24** und **25** nach Serienkonfiguration erfolgen.

Zu Funktion 17-20: (used in TDA9144 only)

Color Dec TDA9143 (Anwendung bei nicht Pal Plus-Geräten) / Color Dec TDA9144 (Anwendung bei Pal Plus-Geräten).

Zu Funktion 24 (Macro Vision gating):
Diese Funktion wurde zwischenzeitlich neu bestimmt und könnte bei der Überprüfung bzw. Menüdurchsicht unterschiedliche Einstellungen aufweisen. Wie der Einstellhilfe zu entnehmen ist, wird sie heute für alle Gerätetypen (AE4) von **on-** auf **off-Zustand** umprogrammiert.

SDA 9361 (Deflect. Cont)

Nr.	Funktion	Einstellwerte des SDA9361								siehe Text
			nach Eingabe von		Serienkonfiguration					
		EEPROM (neu)	TT49	TT76	All	25 inch	28 inch	29 inch	32 inch	
01	V Size	19	19	19	Adj.					K
02	V Centre	224	224	224	Adj.					K
03	V Linearity	250	250	250	Adj.					K
04	S Correction	171	171	171	Adj.					K
05	H Size	42	42	42	Adj.					K
06	Pin Amp	209	209	209	Adj.					K
07	Up Corner Pin	240	240	240	Adj.					K
08	Low Corner Pin	220	220	220	Adj.					K
09	V Bow	251	251	251	Adj.					K
10	Pin Phase	167	167	167	Adj.					K
11	V Angle	235	235	235	Adj.					K
12	HDE	on	on	on	on					S
13	VR	0	0	0	0					S
14	RABL	on	on	on	on					S
15	Blk Dis	off	off	off	off					S
16	2FH 2*Line Frq	on	on	on	on					S
17	Standby Mode	off	off	off	off					S
18	Vertical	on	on	on	on					S
19	BSE Blk select	off	off	off	off					S
20	SSE Start Scan	off	off	off	off					S
21	SRSE Start Red Scan	off	off	off	off					S
22	GBE Guard band	off	off	off	off					S
23	STE Scan time table	off	off	off	off					S
24	NSA Self Adaption	on	on	on	on					S

Nr.	Funktion	Einstellwerte des SDA9361								siehe Text
			nach Eingabe von		Serienkonfiguration					
		EEPROM (neu)	TT49	TT76	All	25 inch	28 inch	29 inch	32 inch	
25	V EHT comp	0	0	0		110	111	75	90	K/S
26	H EHT comp	0	0	0		100	85	35	90	K/S
27	H Centre	63	63	63	32					K/S
28	PWM start	0	0	0	0					S
29	D/A	0	0	0	0					S
30	V blk time	0	0	0		28	28	28	27	K/S
31	H blk time	0	0	0	37					K/S
32	Start V Scan	0	0	0	0					S
33	H blk phase	0	0	0	61					K/S
34	V Scan width 0	0	0	0	0					S
35	V Scan width 1	0	0	0	0					S
36	Guard Band	0	0	0	0					S
37	Start red. scan	0	0	0	0					S
38	Number fields	1	1	1	1					S
39	NI Non Interlace	off	off	off	off					S
40	NR Vsync Noise Red	on	on	on		off	on	off	on	K/S
41	SSC with VBL	on	on	on	on					S
42	Min lines/field	0	0	0	0					S
43	Max lines/field	0	0	0	0					S
44	AFC EHT comp	0	0	0	0					S
45	PLL Freq	6	6	6	6					S
46	VCR	on	on	on	on					S
47	Gen Mod	off	off	off	off					S
48	HSWID	on	on	on	on					S

SDA 9361 (Deflect. Cont)

Nr.	Funktion	Einstellwerte des SDA9361								siehe Text
			nach Eingabe von		Serienkonfiguration					
		EEPROM (neu)	TT49	TT76	All	25 Inch	28 Inch	29 Inch	32 Inch	
49	Int H phase	0	0	0		7	Adj.	7	Adj.	K/S
50	PWM width	0	0	0	0					S
51	Noisy VCR	off	off	off	off					S
52	Killzip	off	off	off	off					S
53	tc3rd	off	off	off	off					S
54	Bandgap4 off	off	off	off	off					S
55	Bandgap off	off	off	off	off					S
56	Bandgap	0	0	0	0					S

K = **Korrektur** / **S** = Service Mode

Nach einem **EEPROM-Austausch**, nach Eingabe von **TT76** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Funktionen **01-11, 25-27, 30-31, 33, 40** und **49** nach Serienkonfiguration erfolgen. Die Funktionen 01-11 sind abzugleichen, da es sich hier um Geometrieeinsteller handelt.

Alle mit einem **S** versehenen Funktionen werden im IC-Menü weiß dargestellt und sind nicht veränderbar (siehe **TT04/Testmode 2**). Um dennoch Korrekturen durchführen zu können, ist der Programmplatz **99** anzuwählen und danach der Befehl **TT05/Testmode 2** einzugeben. Nach erfolgter Korrektur den Service Mode über **Programmplatz 99** und **TT04** wiederherstellen.

Zu Funktion **49** (Int H phase): Siehe **Test Mode 2/TT31** bzw. siehe aktuelle Servicehilfe.

TDA9143 (Col Dec Sub)

Nr.	**Funktion**	**Einstellwerte des TDA9143**							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT86	All	C3	WX2	WS4	
01	Source	2	2	2	0				K
02	Trap bypass	off	off	off	off				
03	Comb Filter	off	off	off	off				
04	Loop closed	on	on	on	on				
05	Time Const	0	0	0	0				
06	XTAL	3	3	3	3				
07	Field Frq	3	3	3	3				
08	OutPort A	off	off	off	off				
09	OutPort B	off	off	off	off				
10	Standard	0	0	0	0				
11	Forced RGB	off	off	off	off				
12	Enable FS	off	off	off	off				
13	External RGB clamp	off	off	off	off				
14	Hue	32	32	32	31				K
15	Line Lock HA mode	on	on	on	on				
16	Force wide window	off	off	off	off				
17	Pal+ Helper blank	0	0	0	0				
18	Baseband delay bypass	off	off	off	off				
19	Low Power Standby	off	off	off	off				
20	MacroVision gating	on	on	on		off	off	on	K
21	Lumi delay control	7	7	7	9				K

K = Korrektur

Nach einem **EEPROM-Austausch**, nach Eingabe von **TT86** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Funktionen **01, 14, 20** und **21** nach Serienkonfiguration erfolgen.

Nr.	Funktion	Einstellwerte des S87C654							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT81	All	C25/C29	28/32WX	28/32WS	
01	FRQ Acqui	1	1	1	1				
02	FRQ Displ	1	1	1	1				
03	Acq Field 60Hz	off	off	off	off				
04	Pic Pos	0	0	0	0				
05	Init ECO/Bend/Nor	off	off	off	off				
06	LFR	on	on	on	off				K
07	NR AABB	off	off	off	off				
08	AABB Cor	off	off	off	off				
09	Cor Phase	off	off	off	on				K
10	Cine	off	off	off	off				
11	Phase	off	off	off	off				
12	Auto Movie	off	off	off		off	on	on	K
13	Still	off	off	off	off				
14	V Zoom	off	off	off	off				
15	Zoom	0	0	0	0				
16	SDAF	off	off	off		off	*	**	K
17	Gen Mode	off	off	off	off				
18	Sat Mode	off	off	off	off				
19	Pip pos	0	0	0	0				
20	Pip Freeze	off	off	off	off				
21	3*4 Pip	off	off	off		off	on	on	K
22	Mlt Pip	off	off	off	off				
23	Pip 60Hz	off	off	off	off				
24	Noise Red	0	0	0		0	2	2	K

Nr.	Funktion	Einstellwerte des S87C654							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT81	All	C25/C29	28/32WX	28/32WS	
25	Split Screen	0	0	0	0				
26	Screen Fade	0	0	0	0				
27	Phase Adapt	off	off	off	off				
28	res	off	off	off	off				
29	HWE	0	0	0	9				K
30	HAMSBDEL 2	off	off	off	off				
31	HAMSBDEL 3	off	off	off	off				
32	Take HAMSBDEL	off	off	off	off				
33	HWE 2steps	off	off	off	off				
34	VWE up	off	off	off	off				
35	VWE1D0	0	0	0	0				
36	Blank_F0	off	off	off	off				
37	Blank_F1	off	off	off	off				
38	Blank_F2	off	off	off	off				
39	Blank_F3	off	off	off	off				
40	res	off	off	off	off				
41	res	off	off	off	off				
42	res	off	off	off	off				
43	res	off	off	off	off				
44	PalPlus	off	off	off	off				
45	Dis_Blank	off	off	off	off				
46	Half_P14	off	off	off	off				
47	VGA_P13	off	off	off	off				
48	VFreq_P15	off	off	off	off				

Nr.	Funktion	Einstellwerte des S87C654							
			nach Eingabe von		Serienkonfiguration				siehe Text
		EEPROM (neu)	TT49	TT81	All	C25/C29	28/32WX	28/32WS	
49	VM P34	on	on	on	on				
50	Master P35	off	off	off	off				
51	VDFL_inc	off	off	off	off				
52	res P20	off	off	off	off				
53	PaP P21	off	off	off	off				
54	TaT P22	off	off	off	off				
55	Frame P23	off	off	off	off				
56	Format P24	off	off	off	off				
57	Pat P25	off	off	off	off				
58	SubStill P26	off	off	off	off				
59	H Lock P27	on	on	on	on				
60	Take R12	off	off	off	off				
61	R12 Hor Delays	0	0	0	0				
62	Take R13/14	off	off	off	off				
63	R13 HWE2STA	0	0	0	214				K
64	R14 HWE2STO	0	0	0	208				K
65	Take R15/16	off	off	off	off				
66	R15 VWE2STA	0	0	0	20				K
67	R16 VWE2STO	0	0	0	47				K
68	Take R17	off	off	off	on				K
69	R17 HDDEL	0	0	0	7				K
70	Take R18	off	off	off	off				
71	R18 HDMSB	0	0	0	225				K
72	Take R19	off	off	off	off				

Nr.	Funktion	Einstellwerte des S87C654							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT81	All	C25/C29	28/32WX	28/32WS	
73	R19 VDMSB	0	0	0	0				
74	Take Reg20/21	off	off	off	off				
75	R20 HDSTA	0	0	0	0				
76	R21 HDSTO	0	0	0	0				
77	Take Reg22	off	off	off	on				K
78	R22 HWE1 Main	0	0	0		50	Adj.	Adj.	K
79	R23 Taste	0	0	0	4				K
80	R24 Status	0	0	0	0				
81	R25 NE	0	0	0	200				K
82	R26 Noise Est	0	0	0	0				

K = Korrektur

Nach einem **EEPROM-Austausch**, nach Eingabe von **TT81** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Funktionen **06, 12, 16, 21, 24, 29, 63-64, 66-69, 71, 77-79**,und **81** nach Serienkonfiguration erfolgen.

Zu Funktion 16 (SDAF):

Gerätetyp	Land	
*WX2:		
	A / B /U	=off
	D / E	=on
**WS4:	B	=off
	OTHERS	=on

Zu Funktion 78 (R22 HWE1 Main): Siehe **Test Mode 2/TT32** bzw. **siehe aktuelle Servicehilfe.** 28/32WX- und 28/32WS-Geräte müssen im Test Mode 2 mit Hilfe von TT32 eingestellt werden. Den Einstellwert anschließend im IC-Menü überprüfen. Bei Pal Plus-Geräten darf er nicht auf 64 eingestellt sein. Wenn doch, dann als neue Einstellung 63 oder 65 vorgeben.

Nr.	Funktion	Einstellwerte des TDA9170					siehe Text
		EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	nach Eingabe von TT82	Serienkonfiguration All	
			siehe Text	siehe Text			
01	Sleep mode	**on**	**on**	on	on	on	
02	Amplitude selection	**on**	**on**	on	on	on	
03	Window selection	**3**	**3**	0	0	0	**K**
04	Black offset enable	**on**	**on**	on	on	on	
05	User variable gamma	**63**	**63**	32	32	32	**K**
06	Adaptive gamma	**63**	**63**	15	15	15	**K**
07	Non - linear ampl.	**63**	**63**	15	15	15	**K**
08	Line start	**15**	**15**	0	0	0	**K**
09	Line stop	**15**	**15**	0	0	0	**K**
10	Field start	**15**	**15**	0	0	0	**K**
11	Field stop	**15**	**15**	0	0	0	**K**

K = **K**orrektur
Nach einem **EEPROM-Austausch** muß eine Aktualisierung der grau gekennzeichneten Funktionen **03 und 05-11** nach Serienkonfiguration erfolgen. Der Abgleich kann vereinfacht werden, wenn der Befehl **TT82** genutzt wird. Wie der Tabelle zu entnehmen ist, gleicht der Befehl **TT82** auf die Einstellwerte eines Seriengerätes ab.

Der Befehl TT49 nimmt bei diesem IC eine Sonderstellung ein. Nach Eingabe von TT49 würden sich die Einstellwerte eines Seriengerätes nicht verändern. Einstellwerte die sich nach einem EEPROM-Austausch einstellen, werden durch Eingabe von TT49 ebenfalls nicht verändert.

Nr.	Funktion	Einstellwerte des SDA9280							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT77	All	C3	WX2	WS4	
01	Int 444	on	on	on	on				
02	Int 422	on	on	on	on				
03	Incodc	on	on	on	on				
04	Incodl	off	off	off	off				
05	Infor	1	1	1	1				
06	Insneg	off	off	off	on				K
07	Trawid	4	4	4	11				K
08	Thresh	4	4	4	11				K
09	Vinv	off	off	off	off				
10	Uinv	off	off	off	off				
11	Cgrres	0	0	0	0				
12	Cgr	off	off	off	off				
13	Ydel1	6	8	6		8	9	9	K
14	Yinv	off	off	off	off				
15	Ygrres	0	0	0	0				
16	Ygr	off	off	off	off				
17	Bcof	8	8	8	4				K
18	Lcof	4	4	4	4				
19	Hcof	8	8	8	4				K
20	Phacom	0	0	0	2				K
21	Cor	off	off	off	on				K
22	Comex	off	off	off	off				
23	Comp	on	on	on	off				K
24	Readd	0	0	0	0				

Nr.	Funktion	Einstellwerte des SDA9280							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT77	All	C3	WX2	WS4	
25	Ovsamp	on	on	on	on				
26	Ovfilt	on	on	on	on				
27	Backgr	on	on	on	off				K
28	Hsdel	53	53	53	1				K
29	Bckpos	182	182	182	201				K
30	Bckwid	25	25	25	96				K
31	Black	16	16	16	71				K
32	Colby	0	0	0	1				K
33	Colfy	0	0	0	0				
34	Colbu	0	0	0	0				
35	Colfu	0	0	0	0				
36	Colbv	0	0	0	0				
37	Colfv	0	0	0	0				
38	Ydel2	off	off	off	off				
39	Ampv	on	on	on	on				
40	Ampu	on	on	on	on				
41	Ampy	on	on	on	on				
42	Pllon	off	off	off	on				K
43	Pllran	3	3	3	3				
44	Test11	0	0	0	0				
45	Test12	0	0	0	0				
46	Test13	0	0	0	0				
47	Divvco	4	4	4	4				
48	Divref	3	3	3	4				K

Nr.	Funktion	Einstellwerte des SDA9280							siehe Text
			nach Eingabe von		Serienkonfiguration				
		EEPROM (neu)	TT49	TT77	All	C3	WX2	WS4	

K = Korrektur
Nach einem **EEPROM-Austausch**, nach Eingabe von **TT77** oder nach Eingabe von **TT49** muß eine Aktualisierung der grau gekennzeichneten Funktionen **06-08, 13, 17, 19-21, 23, 27-32, 42** und **48** nach Serienkonfiguration erfolgen.

Zu Funktion 23 (Comp)
Diese Funktion kann zum Beispiel im Wide Mode aktiv geschaltet und von off- auf on-Zustand umgeschaltet werden. Ein zurücksetzen auf den alten Wert (off) wäre anschließend nicht mehr möglich. Wie man der Einstellhilfe entnehmen kann, ist dieser Schalter nach einem EEPROM-Austausch aber von on- auf off-Zustand zu korrigieren. In beiden Fällen kann eine Änderung **nur im 4:3 -Mode** erfolgen.

Zu Funktion 24 (Readd)
Wird diese Funktion im 4:3-Mode aktiv geschaltet, dann verändert sich der Einstellwert von 0 auf 45. Im **Wide Mode** kann diese Funktion dann wieder auf 0 zurückgesetzt werden (aktivieren-verändern-ok).

Zu Funktion 27 (Backgr)
Nach einem EEPROM-Austausch setzt sich dieses Parameter automatisch auf on-Zustand. **Nur** im **Wide Mode** kann diese Funktion von on- auf off-Zustand zurückgesetzt werden (aktivieren-verändern-ok).

Zu Funktion 32 (Colby)
Der nach einem EEPROM-Austausch vorherrschende Einstellwert 0 läßt sich **nur** im **4:3-Mode** von 0 nach 1 hin korrigieren. Eingestellt werden die im 4:3-Mode links und rechts auftretenden schwarzen Balken. Der Einstellbereich erstreckt sich von 0 (dunkel) bis nach 15 (grau).

Zu Funktion 47/48 (Divvco/Divref)
Um nach einem EEPROM-Austausch bei der Funktion 48 (Divref) wieder den Einstellwert 4 zu erhalten, ist diese **einmal** im **Wide Mode** zu aktivieren und umzuschalten.

SDA9288 (Single PIP)

Nr.	Funktion	Einstellwerte des SDA9288					siehe Text
		EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	nach Eingabe von TT87	Serienkonfiguration All	
			siehe Text	siehe Text			
01	PIPON	on	on	off	on	off	K
02	FRAME	on	on	off	off	off	
03	LINEDBL	on	on	off	off	off	
04	READ27	on	on	off	on	off	K
05	PLLOFF	on	on	off	off	off	
06	FREEZE	on	on	off	off	off	
07	SYSACT	on	on	off	off	off	
08	MIXDIS	on	on	on	on	on	
09	SELDEL	15	15	1	1	1	
10	POSHOR 8-9	3	3	0	0	0	
11	POSHOR 0-7	255	255	12	192	12	K
12	POSVER	255	255	48	48	48	
13	YDEL	7	7	0	0	0	
14	SW1	3	3	0	0	0	
15	SW2	3	3	0	0	0	
16	IMOD	3	3	0	0	0	
17	PMOD	3	3	0	0	0	
18	CHRINS	on	on	on	on	on	
19	INSHVI	on	on	on	on	on	
20	DECHOR	on	on	off	off	off	
21	DECVER	on	on	off	off	off	
22	HSIDEL	15	15	5	4	5	K
23	CLISW	on	on	on	off	on	K
24	CLPFIX	on	on	off	off	off	
25	CLPS	on	on	off	off	off	

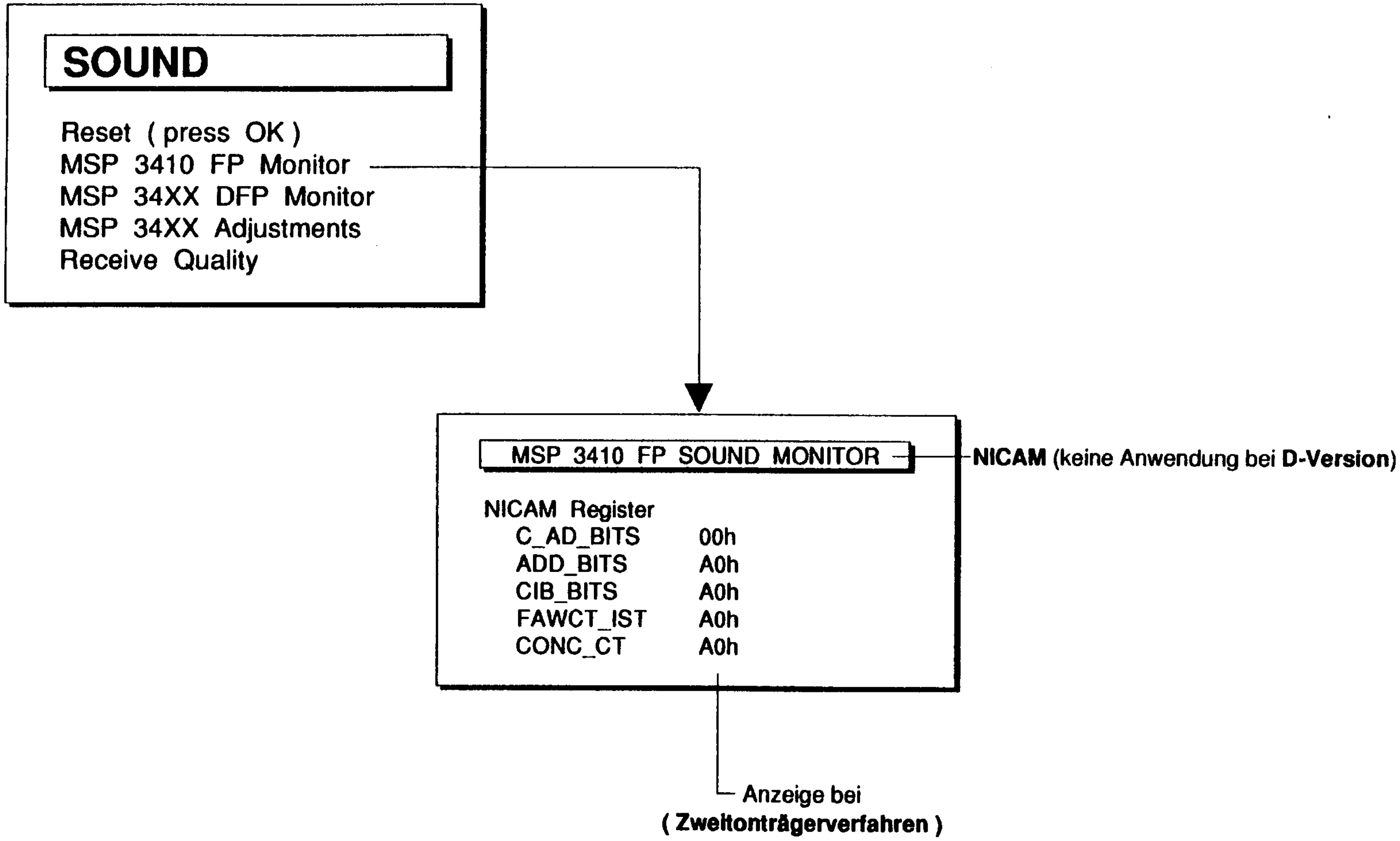
SDA9288 (Single PIP)

Nr.	**Funktion**	**Einstellwerte des SDA9288**					
		EEPROM (neu)	**EEPROM (neu) plus TT49**	**Serie plus TT49**	**nach Eingabe von TT87**	**Serienkonfiguration All**	**siehe Text**
			siehe Text	siehe Text			
26	VSIDEL	**31**	**31**	0	0	0	
27	VSIISQ	**on**	**on**	off	off	off	
28	AMSEC	**on**	**on**	off	off	off	
29	VSPDEL	**31**	**31**	0	0	0	
30	VSPISQ	**on**	**on**	off	off	off	
31	PARSYND	**on**	**on**	on	on	on	
32	FRY	**15**	**15**	8	8	8	
33	CON	**15**	**15**	4	4	4	
34	FRU	**15**	**15**	0	0	0	
35	FRV	**15**	**15**	0	0	0	
36	FRWIDH	**7**	**7**	2	2	2	
37	FRWIDV	**3**	**3**	1	1	1	
38	OUTFOR	**on**	**on**	on	on	on	
39	CHRPIP	**on**	**on**	on	on	on	
40	MAT	**7**	**7**	4	4	4	
41	DACONDE	**on**	**on**	off	off	off	
42	PLLTC	**3**	**3**	3	1	3	**K**
43	DACONST	**on**	**on**	off	off	off	
44	LEFT POS	**255**	**255**	195	190	195	**K**
45	RIGHT POS LOW	**255**	**255**	0	11	0	**K**
46	RIGHT POS HIGH	**3**	**3**	2	2	2	
47	UPPER POS	**255**	**255**	58	55	58	**K**
48	LOWER POS	**255**	**255**	178	185	178	**K**

Nr.	**Funktion**	**Einstellwerte des SDA9288**					**siehe Text**
		EEPROM (neu)	**EEPROM (neu) plus TT49**	**Serie plus TT49**	**nach Eingabe von TT87**	**Serienkonfiguration All**	
			siehe Text	siehe Text			

K = Korrektur
Nach einem **EEPROM-Austausch** muß eine Aktualisierung der Einstellwerte erfolgen. Der Abgleich kann vereinfacht werden, wenn der Befehl **TT87** genutzt wird. Anschließend sind in der Tabelle dann nur noch die grau gekennzeichneten Funktionen **01, 11, 22-23, 42, 44-45** und **47-48** nach Serienkonfiguration einzustellen.

Der Befehl TT49 nimmt bei diesem IC eine Sonderstellung ein. Nach Eingabe von TT49 würden sich die Einstellwerte eines Seriengerätes nicht verändern. Einstellwerte die sich nach einem EEPROM-Austausch einstellen, werden durch Eingabe von TT49 ebenfalls nicht verändert.



SOUND

Reset (press OK)
MSP 3410 FP Monitor
MSP 34XX DFP Monitor
MSP 34XX Adjustments
Receive Quality

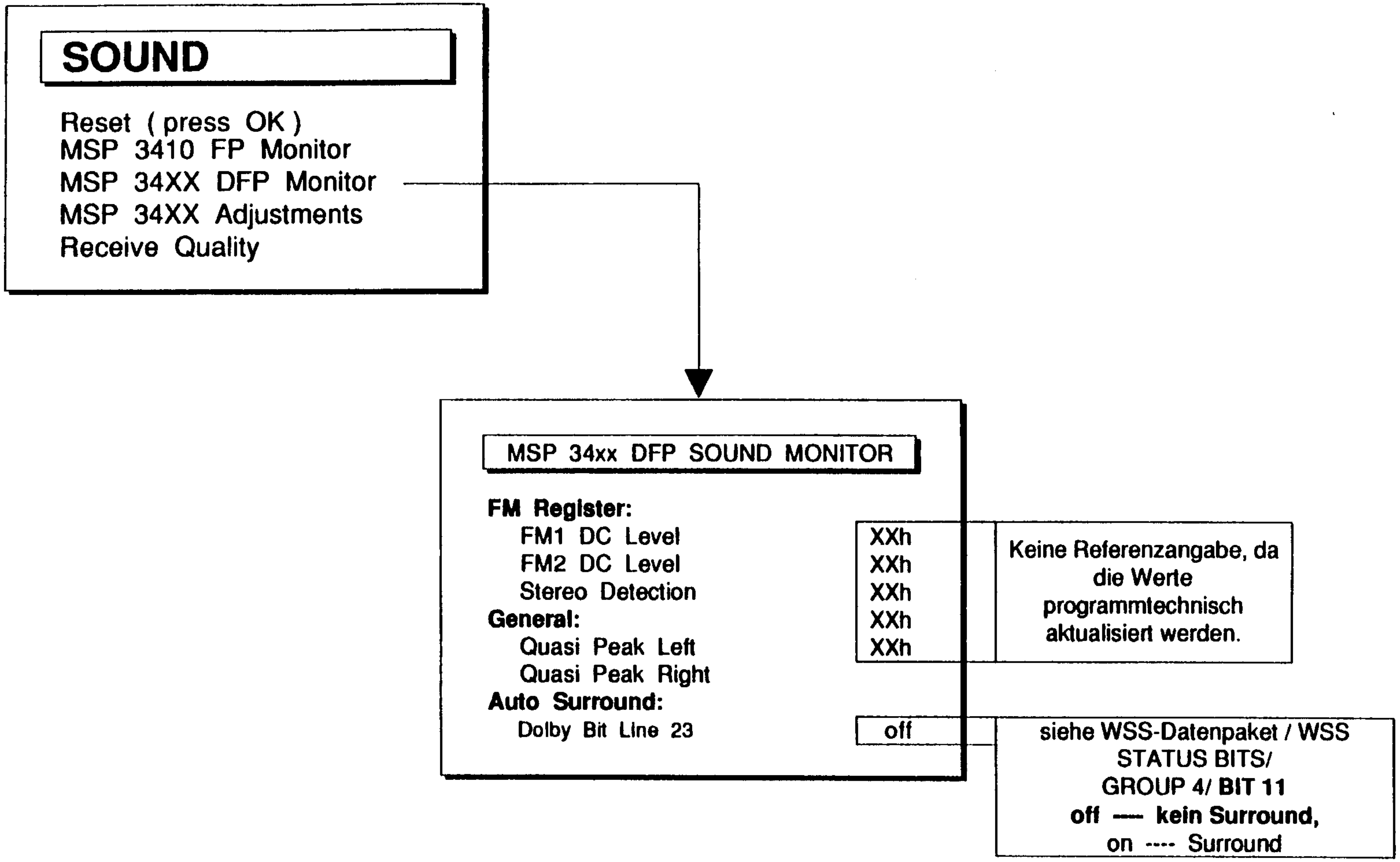
MSP 3410 FP SOUND MONITOR

NICAM Register

C_AD_BITS	00h
ADD_BITS	A0h
CIB_BITS	A0h
FAWCT_IST	A0h
CONC_CT	A0h

NICAM (keine Anwendung bei **D-Version**)

Anzeige bei
(Zweitonträgerverfahren)



SOUND

Reset (press OK)
MSP 3410 FP Monitor
MSP 34XX DFP Monitor
MSP 34XX Adjustments
Receive Quality

MSP 34xx DFP SOUND MONITOR

FM Register:		
FM1 DC Level	XXh	Keine Referenzangabe, da die Werte programmtechnisch aktualisiert werden.
FM2 DC Level	XXh	
Stereo Detection	XXh	
General:	XXh	
Quasi Peak Left	XXh	
Quasi Peak Right		
Auto Surround:		
Dolby Bit Line 23	off	siehe WSS-Datenpaket / WSS STATUS BITS/ GROUP 4/ **BIT 11** **off --- kein Surround,** on ---- Surround

SOUND

Reset (press OK) — Die Funktion **Reset (ok)** reproduziert im nachfolgend aufgeführten Untermenü die Einstellwerte eines Seriengerätes.
MSP 3410 FP Monitor
MSP 34XX DFP Monitor
MSP 34XX Adjustments
Receive Quality

MSP 3400 / 10 ADJUSTMENTS

	Vorgabe der Einstellwerte für **alle Modelle (All)** siehe Seite 45	Einstellwerte eines Seriengerätes z.B. **WS4**	**Werte nach EEPROM (neu)** Korrektur
SCART Prescale	(1Bh)	[1Bh]	1Bh
FM Prescale	(24h)	[24h]	24h
NICAM Prescale B/G	(7fh)	[7Fh]	7Fh
NICAM Prescale L	(7fh)	[7Fh]	7Fh
NICAM Prescale I	(7fh)	[7Fh]	7Fh
NICAM Prescale D/K	(7fh)	[7Fh]	7Fh
Volume SCART Ch.	(40h)	[40h]	40h
Treble-Offset	(0)	**[0]**	**-1**
Bass-Offset	(model)	**[0]**	**-1**
Loudness-Offset	(model)	**[0]**	**+8**
ANA Input 1/2	(0)	[0]	0
Beeper	(off)	**[off]**	**on**
Beeper Volume	(06h)	**[06h]**	**7Fh**
HP PAP Volume-Off.	(-1)	[-1]	-1
Ext. D/A Conv.	(model)	**[0]**	**2**

Gerätespezifische Einstellungen / Korrektur erforderlich siehe Seite 45

zu MSP 3400 / 10 ADJUSTMENTS

Funktion	EEPROM (neu)	nach Reset (press ok)	Serie	
SCART Prescale	1Bh	1Bh	1Bh	
FM Prescale	24h	24h	24h	
NICAM Prescale B/G	7Fh	7Fh	7Fh	
NICAM Prescale L	7Fh	7Fh	7Fh	
NICAM Prescale I	7Fh	7Fh	7Fh	
NICAM Prescale L	7Fh	7Fh	7Fh	
NICAM Prescale I	7Fh	7Fh	7Fh	
Treble-Offset	-1	0	0	
Bass-Offset	-1	0	(model) 0	K / siehe Seite 45
Loudness-Offset	+8	+8	(model) 0	K / siehe Seite 45
ANA Input 1/2	0	0	0	
Beeper	on	off	off	
Beeper Volume	7Fh	06h	06h	
HP PAP Volume-Off.	-1	-1	-1	
Ext. D/A Conv.	2	2	* (model) 0	K / siehe Text

Alle gerätespezifischen Einstellungen **(model)** müssen nach Eingabe von Reset (press ok) anhand der Einstellhilfe korrigiert werden.

zu ANA Input 1/2:
Diese Einstellmöglichkeit wird in der Fertigung nur für Testzwecke eingesetzt. Änderungen werden nicht im NVM gespeichert. Nach TT00 oder Power OFF/ON ist die automatische Abfrage wieder zugeschaltet.
0 = Automatisch (Norm I & D/K = Analogeingang 1, Norm B/G & L = Analogeingang 2)
1 = Analogeingang 1, 2 = Analogeingang 2

zu Ext. D/A Conv.
*** Adr_Enable_EXT_D/A:** 0 = ext. D/A OFF (WS-Model ohne NICAM), 1 = ext. D/A ON (WS-Model mit NICAM), 2 = auto det. ext. D/A (depend on NICAM MSP).

SOUND

Reset (press OK) — Die Funktion **Reset (ok)** reproduziert im nachfolgend aufgeführen Untermenü die Einstellwerte eines Seriengerätes.
MSP 3410 FP Monitor
MSP 34XX DFP Monitor
MSP 34XX Adjustments
Receive Quality

RECEIVE QUALITY

			nach Reset (press ok)	**Werte nach EEPROM (neu)** Korrektur
Mono	> Stereo	(+30)	[+30]	+30
Mono	> Bil.	(- 30)	**[- 30]**	**-1**
Stereo	> Mono	(+12)	[+12]	+12
Stereo	> Bil.	(- 20)	**[- 20]**	**-1**
Bil.	> Mono	(- 12)	**[- 12]**	**-1**
Bil.	> Stereo	(+20)	[+20]	+20
NICAM Error Max.		(03h)	[03h]	03h
NICAM Error Min.		(00h)	[00h]	00h
FAW Nominal		(0ch)	[0Ch]	0Ch
FAW Tol.		(02h)	[02h]	02h
FAW Min.		(0ah)	[0Ah]	0Ah

Vorgabe der Einstellwerte für **alle Geräte (All)**

Einstellwerte eines Seriengerätes **z.B. WS4**

MSP 3400/10 ADJUSTMENT	**All**
Scart Pr	1Bh
FM PRESC	24h
N-P B/G	7Fh
N-P L	7Fh
N-P I	7Fh
N-P D/K	7Fh
Volume Scart Channel	40h
Treble	0
Bass	0
Beeper ON/OFF	off
Beeper-Volume	06h

MSP 3400/10 ADJUSTMENT	**All**	**C3**	**WX2**	**WS4**
Volume Level Speaker	22			
Volume Level Headphone	22			
Balance	00			
Pap Headphone Volume Offset	-1			
Treble Offset	0			
Bass Offset		2	2	0
Sound effects	00			
Offset L	00			
Offset C	00			
Offset R	00			
Offset S	00			
Loudness Offset		9	5	0
Adr_Enable_EXT_DA		0	0	* (siehe Seite 42)
Sound Control	00			
Dolby Setup	03			
Sounddelay Setup	03			
Intelligent Sound Mode	00			

	PALPLUS	Monitor	
		Bin	Hex
	Helper Gain	0	
	Helper Offset	0	
	Y Black	0	
	Y White	0	
	Noise	0	
	L.-.F.S.N.-.1.0	00011010	1A
	S.u.H.C.F.F.m.t	00000000	00

Nr.	Funktion	EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	nach Eingabe von TT78	Serienkonfiguration All	siehe Text
			siehe Text	siehe Text			
01	Modes setting	11111111	11111111	00000000	00000000	00000000	
02	Help. G. Control	63	63	42	42	42	
03	Help. O. Control	-1	-1	-7	-13	-7	K
04	TDA 9144 HUE	32	32	32	32	31	G
05	Luma G. Control	0	0	0	0	0	G
06	Luma O. Control	-1	-1	-31	-32	-31	K
07	Adapt. Notch V	15	15	7	15	7	K
08	Adapt. Notch U	15	15	7	15	7	K
09	100 Hz	2	2	0	0	0	G

Line23 det

Nr.	Funktion	EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	nach Eingabe von TT78	Serienkonfiguration All	siehe Text
			siehe Text	siehe Text			
10	Auto / Man	**00000000**	**00000000**	00000000	00000000	00000000	**G**
11	VTR H/C+ on	**255**	**255**	75	75	75	
12	VTR H/C+ off	**255**	**255**	85	85	85	
13	TDA 9144P+HeBl	**off**	**off**	off	off	off	**G**
14	TDA 9144LuHeDy	**off**	**off**	off	off	on	**G**
15	TDA 9144BaDyLi	**off**	**off**	off	off	off	**G**
16	TDA 9144LuDeCo	**on**	**on**	on	on	on	**G**
17	ZoomPosPTCstar	**03FFh**	**03FFh**	000Ch	0000h	000Ch	**K**
18	ZoomPosECOstar	**03FFh**	**03FFh**	0000h	0000h	0000h	
19	ZoomPos invert	**on**	**on**	off	off	off	
20	PALencoderCphs	**on**	**on**	on	on	on	
21	PALencoderCsel	**on**	**on**	on	on	on	
22	PALencoderCinv	**on**	**on**	on	on	on	
23	MasterClkMCphs	**3**	**3**	0	0	0	
24	MasterClkMCsel	**on**	**on**	on	on	on	
25	Hout Delay	**3**	**3**	0	0	0	
26	Hhigh	**03FFh**	**03FFh**	02CEh	02CEh	02CEh	
27	Hlow	**03FFh**	**03FFh**	0007h	0007h	0007h	
28	PLL Set	**07FFh**	**07FFh**	06BFh	06BFh	06BFh	

K = Korrektur/G = Gesperrt

Erklärender Text zum Abgleich (Line23 det) siehe Seite 48

Nr.	Funktion	EEPROM (neu)	EEPROM (neu) plus TT49	Serie plus TT49	nach Eingabe von TT78	Serienkonfiguration All	siehe Text
			siehe Text	siehe Text			

Nach einem **EEPROM-Austausch** muß eine Aktualisierung der Einstellwerte im **Menü Line23 det** erfolgen. Der Abgleich läßt sich vereinfachen, wenn der Befehl **TT78** genutzt wird. Anschließend sind dann nur noch die in der Tabelle **grau** oder durch ein **K** gekennzeichneten Funktionen **03, 06-08** und **17** nach Serienkonfiguration zu korrigieren.

Die zusätzlich noch durch ein **G** gekennzeichneten Funktionen **04-05, 09, 10** und **13-16** finden zur Zeit keine Anwendung und sind generell gesperrt. Deshalb brauchen mit **G** versehene Einstellungen im Abgleich nicht mehr berücksichtigt bzw. grau gekennzeichnet werden, obwohl EEPROM- und Seriendaten unterschiedlich sind.

Der Befehl TT49 nimmt bei diesem IC eine Sonderstellung ein. Nach Eingabe von TT49 würden sich die Einstellwerte der Funktionen 04 und 14 eines Seriengerätes verändern. Einstellwerte die sich nach einem EEPROM-Austausch einstellen, werden durch Eingabe von TT49 nicht verändert.